Environmental Assessment

Forest Plan Amendment for Threatened and Endangered Species

Wayne National Forest

May 22, 2003

Abstract: The proposal is to amend the Land and Resource Management Plan for the Wayne National Forest (Forest Plan) to incorporate new information related to Threatened and Endangered species in the vicinity of the Forest. This Plan amendment will incorporate the results of formal consultation with the USDI Fish and Wildlife Service (Fish and Wildlife Service) on Threatened and Endangered Species located on, or near, the Wayne National Forest.

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Summary

The purpose of this proposal is to amend the Land and Resource Management Plan for the Wayne National Forest (Forest Plan) to incorporate new direction for the management of Threatened and Endangered species in the vicinity of the Forest. This direction is based on formal consultation with the USDI Fish and Wildlife Service (Fish and Wildlife Service) as documented in their Biological Opinion. The function of this Environmental Assessment (EA) is to analyze the programmatic impact of amending the Forest Plan to include this new direction. The Forest Supervisor has determined that this is not a significant amendment to the Forest Plan because it does not meet both of the required definitions of significance found in Forest Service Manual (FSM) 1922.5.

This EA analyzes three alternative actions:

Alternative A	**Proposed Action --** The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions, contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition, existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.
Alternative B	**No Action --** The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.
Alternative C	**Enhanced level of protection and Conservation Recommendations --** This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate.

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

Chapter 1. Introduction: The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Chapter 2. Alternatives, including the Proposed Action: This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Chapter 3. The Affected Environment and Effects Analysis: This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by alternatives and resources. The affected environment is described first, followed by the effects of the alternatives. The No Action Alternative provides a baseline for evaluation and comparison of the other alternatives.

Forest Service Participants: This section provides a list of persons consulted during the development of the environmental assessment.

Appendices: The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Forest Headquarters Office in Nelsonville, Ohio.

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Environmental Assessment
Forest Plan Amendment for Threatened and Endangered Species

Chapter 1. Introduction

Background

In 1988, the Wayne National Forest completed a comprehensive land management planning effort with the publishing of the Wayne National Forest Land and Resource Management Plan (Forest Plan) (USDA FS, 1988). The Forest made a concerted effort to seek out public involvement during the development of the Forest Plan. With the public's help, Forest planners identified issues and alternative approaches to management of the Wayne National Forest. An environmental impact statement (EIS) was prepared in conjunction with the Forest Plan to document the analysis. The Forest developed the EIS in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality implementing regulations for NEPA.

The approval of the Record of Decision for the final EIS on January 4, 1988 represents the first level of decision-making related to land and resource management planning. This decision determined the desired future condition of the Wayne National Forest and established the guidance under which future projects are implemented.

The analysis that supported the Forest Plan determined that Federally listed threatened and endangered species were not present on the Forest. This determination was developed through informal consultation with the Fish and Wildlife Service in 1986. The Forest Plan was amended in 1992 to recognize the possible occurrence of four federally listed species (Indiana bat, bald eagle, peregrine falcon, and Kirkland's warbler) on the Wayne National Forest. In 1998 an Indiana bat, a federally listed species, was found roosting in the Forest. Subsequent surveys have found Indiana bats at a number of locations around the Forest. During this period (1986-2001) the effects of Forest actions on Federally listed species were addressed through informal consultation with the Fish and Wildlife Service.

The Wayne National Forest completed a Biological Assessment (BA) (USFS, 2001) of the potential effects to federally listed threatened and endangered species that could result from of the continued implementation of the Forest Plan in March of 2001. The BA was submitted to the Fish and Wildlife Service for formal consideration. The Fish and Wildlife Service completed their review of the BA, and issued a Biological Opinion (USFWS, 2001). The Biological Opinion (BO) will remain in effect for five years (until September 20,2006) or until the Forest Plan is revised and a new BO is issued on the revised Plan. In the BO (pg 35) the Fish and Wildlife Service stated that:

> "In March 2001 the Wayne National Forest completed a Biological Assessment (BA) of the continued implementation of the Forest Plan and the potential effects to federally listed threatened and endangered species. The BA was submitted to the Fish and Wildlife Service for consideration. The Fish and Wildlife Service has finished their review, and have issued

a Biological Opinion on the Land and Resource Management Plan, Wayne National Forest, Ohio (September 2001). The measures described below [the Terms and Conditions] are non-discretionary, and must be undertaken by the Wayne NF for the exemption in section 7(o)(2) to apply. The Wayne NF has a continuing duty to regulate the activity covered by the incidental take statement. If the Wayne NF fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Wayne NF must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)]."

Purpose and Need for Action

The purpose of this action is to amend the Land and Resource Management Plan for the Wayne National Forest (Forest Plan) to incorporate new direction for the management of Threatened and Endangered species. This direction is based on formal consultation with the USDI Fish and Wildlife Service (Fish and Wildlife Service) as documented in their Biological Opinion. The Fish and Wildlife Service, in their Biological Opinion on the Land and Resource Management Plan for the Wayne National Forest concluded that the continued implementation of the existing Forest Plan is not likely to jeopardize the existence of the Indiana bat, bald eagle, and American burying beetle and as critical habitat has not been designated on the Forest for these three species none will be affected. (USFWS 2001, pgs. 33-34)

The Fish and Wildlife Service also stated that while "Section 9 of the ESA [Endangered Species Act] and Federal regulation pursuant to section 4(d) of the ESA prohibits the take of endangered and threatened species, respectively, without special exemption." take "that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of the incidental take statement. (USFWS 2001, pg. 34)

The Fish and Wildlife Service also declared that the Reasonable and Prudent Measures and the Terms and Conditions are non-discretionary, and must be undertaken by the Wayne National Forest for the exemption described above to apply, and that the Wayne National Forest has "a continuing duty to regulate the activity covered by the incidental take statement." "If the Wayne National Forest fails to assume and implement the terms and conditions, the protective coverage…may lapse." The Wayne National Forest must also monitor incidental take and report the impact of its actions on the federally listed species to the Fish and Wildlife Service. (USFWS 2001, pgs. 35)

The purpose and need for this proposal is to amend the Forest Plan to incorporate the Reasonable and Prudent Measures and the Terms and Conditions included in the Biological Opinion as standards and guidelines in the Forest Plan. This action will insure that the Reasonable and Prudent Measures and Terms and Conditions are fully implemented and that the incidental take permit authorized by the Fish and Wildlife Service remains in effect.

Proposed Action

The Forest Supervisor is proposing to amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures (as Forest Management Goals) and Terms and Conditions (as Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) prepared by the U.S. Fish and Wildlife Service for the Wayne National Forest Plan. In addition, current Forest Plan directions that conflict with the non-discretionary Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted, as appropriate. At a minimum, the BO requires these non-discretionary activities be implemented to protect federally listed species.

The Reasonable and Prudent Measures and Terms and Conditions are the result of formal consultation with the Fish and Wildlife Service; they must be followed and are non-discretionary without additional consultation. The Reasonable and Prudent Measures are necessary and appropriate to minimize take of the threatened and endangered species. The Terms and Conditions are specific actions that describe how the reasonable and prudent measures must be met.

Reasonable and Prudent Measures. The Reasonable and Prudent Measures would be added as Forest Management Goals in a new *"Federally Endangered and Threatened Species"* section of Chapter 4 of the Forest Plan, beginning on page 4-3. The following is a list of the Reasonable and Prudent Measures taken directly from the Biological Opinion.

Reasonable and Prudent Measures for the Indiana Bat

1. Maintain adequate canopy cover in hardwood stands (depending on the size of the stands) to provide Indiana bat foraging habitat.

2. Provide roosting habitat by preserving shagbark hickory *(Carya ovata*) or shellbark hickory *(Carya laciniosa*) trees.

3. No snag removal (snags with a dbh >6 inches), except where they pose an imminent threat to human safety.

3. Maintain a component of large, over-mature trees, in hardwood stands, when possible. These trees will ensure a continuous supply of large roost trees for the bat.

4. Tree removal activity will be closely monitored and reported on a project-by-project basis to ensure that impacts of incidental take associated with future proposed projects are appropriately minimized.

6. Protect all known Indiana bat hibernacula on the Wayne National Forest.

Reasonable and Prudent Measures for the Bald Eagle

1. Reduce the potential of removing unknown communal night roosts.

2. Discourage continuous and/or repeated human disturbance where wintering eagles (November 15 and March 15) are known to have communal night roosts or form daily congregations [as defined in the Northern States Bald Eagle Recovery Plan (USFWS 1983a)] on all lands or waters managed by the Wayne NF.

3. Use appropriate smoke management techniques to minimize potential impacts of smoke inversion to occupied communal night roosts, daytime concentrations, or occupied breeding territories.

4. In association with the predicted removal of this species from the list of endangered and threatened wildlife, assist the Service and the Ohio Division of Wildlife in monitoring the status of the species on the Wayne NF up through the five years following delisting, according to requirements outlined in the ESA.

Reasonable and Prudent Measures for the American Burying Beetle

The U. S. Fish and Wildlife Service determined that no incidental take for the American Burying Beetle is anticipated, therefore, no Reasonable and Prudent Measures are necessary and appropriate to minimize incidental take of American burying beetles on the Wayne National Forest.

Terms and Conditions. The Terms and Conditions required by the BO would be added as Forest-wide Standards and Guidelines to the Threatened and Endangered Species section of Chapter 4 of the Forest Plan, starting on page 4-43. The following is a listing of the Terms and Conditions taken directly from the Biological Opinion.

Terms and Conditions related to the Indiana bat

1. When conducting hardwood timber harvests and completing timber stand improvement (TSI) within hardwood stands, maintain at least 60 percent canopy cover whenever possible.

2. Shagbark hickory or shellbark hickory trees shall not be cut during TSI activities, unless the density of trees of these 2 species, combined, exceeds 16 trees/acre. If present, at least 16 live shagbark and shellbark hickory (combined) greater than 11 inches dbh must be maintained per acre.

3. Snags that are potential Indiana bat habitat shall not be removed for TSI purposes. Firewood cutting permits should clearly state that standing dead trees may not be taken.

4. To maintain a component of large, over mature trees at least 3 live trees per acre > 20 inches dbh should be maintained in the stand. The 3 trees should be any of the preferred species listed below or a combination of the species listed below. (A tree with < 10 percent live canopy should be considered a snag and would not count towards the 3 trees to be left). These must be among the largest trees of these species remaining in the stand. An additional 6 live trees per acre > 11 inches dbh (of the species listed below) must also be maintained. (The "per acre" requirement can be expressed as the average per acre on a stand-wide basis, depending on the definition of a stand).

shagbark hickory (*Carya ovata*)

shellbark hickory (*Carya laciniosa*)
bitternut hickory (*Carya cordiformis*)
silver maple (*Acer saccharinum*)
green ash (*Fraxinus pennsylvanica*)
white ash (*Fraxinus americana*)
eastern cottonwood (*Populus deltoides*)
northern red oak (*Quercus rubra*)
post oak (*Quercus stallata*)
white oak (*Quercus alba*)
slippery elm (*Ulmus rubra*)
American elm (*Ulmus americana*)
black locust (*Robinia pseudoacacia*)

(This list is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as identified.)

If there are no trees > 20 inches dbh to leave standing, 16 live trees per acre must be left, and these must include the largest specimens of the preferred species remaining in the stand.

5. During non-hibernation season, Wayne National Forest will retain all shagbark and shellbark hickory trees over 6 inches dbh and all live trees, of any species, over 6 inches dbh that are hollow, have major splits, or have broken tops, unless they are a safety hazard. Additionally, the Wayne National Forest will retain a minimum of 12 live trees per acre over 6 inches dbh, of any species, with large areas of loose bark, unless they are a safety hazard. Harvesting of shagbark and shellbark hickory is allowed on the forest during the Indiana bat hibernating season (after September 15 and before April 15) except as might be restricted by the preceding terms and conditions #2 and #4.

6. To ensure that the exemption of incidental take is appropriately documented the Fish and Wildlife Service will implement a tiered programmatic consultation approach. As individual projects are proposed under the Forest Plan, Wayne National Forest shall provide project-specific information to Reynoldsburg Ohio Field Office that (1) describes the proposed action and the specific area to be affected, (2) identifies the species that may be affected, (3) describes the manner in which the proposed action may affect listed species, and the anticipated effects, (4) specifies that the "anticipated effects from the proposed project are similar to those anticipated in the programmatic biological opinion," (5) a cumulative total of take that has occurred thus far under the tier I biological opinion, and (6) describes any additional effects, if any, not considered in the tier I consultation.

The Fish and Wildlife Service will review the information provided by the Wayne National Forest for each proposed project and this project-specific review is appropriately documented. During this review if it is determined that an individual proposed project is not likely to adversely affect listed species, the Fish and Wildlife Service will complete its documentation with a standard concurrence letter that refers to this Biological Opinion, the tier I programmatic document (i.e., it "tiers" to it), and specifies that the Fish and Wildlife Service concurs that the proposed project is not

likely to adversely affect listed species or designated critical habitat. If it is determined that the proposed project is likely to adversely affect listed species or designated critical habitat, then the Fish and Wildlife Service completes a tier II biological opinion with a project-specific incidental take statement.

Because habitat manipulation acreage is being used to monitor levels of incidental take, for each proposed individual project, within the tree removal activities listed below, provide Reynoldsburg Ohio Field Office with a description of the project that includes the location, type of activity, and total acreage to be disturbed by the individual project. When reporting the type of activity, it must correspond to one of the following management activities:

• Hardwood thinning and uneven-aged cuts	2250 acres
• Pine thinning and uneven-aged cuts	250 acres
• Timber stand improvement	2500 acres
• Prescribed fire	2500 acres
• Permanent road construction	32 acres
• Temporary road construction	37 acres
• Oil and gas wells road construction	25 acres
• Trail construction (hiking, horse and ORV)	160 acres
• Creation of wildlife openings	352 acres
• Minerals development	2125 acres
• Special use permits (roads and utility corridors)	125 acres
• Hazard tree removal	125 trees
• Closing of underground entrances	250 acres

Each project proposal must report how the individual project increases the cumulative forested acres (or number of trees) affected within each of the above management activities and report on the total acreage (or number of trees) remaining in each management activity. Your letter requesting the project specific review must include your determinations that the proposed project is consistent with this programmatic biological opinion and incidental take statement and request that the proposed project be tiered to this programmatic biological opinion.

7. Any dead bats located on the Wayne National Forest, where the species determination is unclear, should be immediately reported to Reynoldsburg Ohio Field Office [(614) 469-6923], and subsequently transported on ice to that office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to Reynoldsburg Ohio Field Office. Reynoldsburg Ohio Field Office will make a species determination on any dead or moribund bats found on the Wayne National Forest. If an Indiana bat is identified, Reynoldsburg Ohio Field Office will contact the appropriate Fish and Wildlife Service Law Enforcement office. (The handling part of this term and condition does not apply to those specific individuals who are permitted, as agents of the State, for conducting work on Federally listed bat species.)

8. If additional Indiana bat hibernacula are discovered on the Wayne National Forest, bat-friendly gates shall be installed, as funding allows, to prevent unauthorized entry. Human access to areas surrounding the known hibernacula will be deterred by closing or relocating trails that lead to or pass within easy viewing distance of hibernacula. A one-quarter mile of undisturbed forested buffer should be retained surrounding all known hibernacula where the Forest Service has jurisdiction. Undisturbed forested buffer is defined as an area where trail and road construction and tree harvesting activities are prohibited. Prescribed fires should not occur within one-quarter mile of all known hibernacula on the Wayne National Forest, where the Forest Service has jurisdiction, during the fall swarming and hibernation period of the Indiana bat. When developing prescribed burn plans, Wayne National Forest personnel should ensure that smoke management in the vicinity of known hibernacula will prevent smoke from entering into the known hibernacula.

9. Before backfilling any mine openings, such as a portal entrance or subsidence depression with a developed opening, a survey for potential bat presence will be required during the fall swarming period. This period usually falls between mid-August to mid-October. The survey is optional if the closure will be accomplished by installing a bat-friendly gate.

Terms and Conditions related to the Bald Eagle

1. Conduct a minimum of three annual winter (early, middle, and late) searches, as funds are available, (aerial and/or ground) to locate any previously unknown communal night roosts or eagle concentrations following criteria outlined in the Northern States Bald Eagle Recovery Plan (USDI FWS 1983). Searches will focus on areas eagles are known to frequent, where congregations of eagles have been previously documented, or where there are concentrated food sources (such as poultry farms, hog lots, aquiculture facilities, etc.) near lands or waters managed by the WNF.

2. Any bald eagle communal night roosts and concentrations (including nests) discovered during winter surveys or during any additional field surveys of proposed project areas, shall be protected following guidelines outlined in the Northern States Bald Eagle Recovery Plan (USDI FWS 1983).

3. Any bald eagle nests discovered on Wayne National Forest lands shall be immediately reported to Reynoldsburg Ohio Field Office and the Ohio Department of Natural Resources, Division of Wildlife (ODNR-DOW).

4. By June 1 of each year, provide an annual report to Reynoldsburg Ohio Field Office and the ODNR-DOW, that includes the following information: 1) results of any winter searches for communal night roosts and concentrations, including mid-winter surveys conducted in cooperation with the Service/ODNR-DOW, and 2) discovery of any nesting territories on lands managed by the Wayne National Forest. If no surveys have been conducted and no nesting territories discovered on Wayne

National Forest lands during an annual reporting period, an annual report should be submitted with a statement to this effect.

5. Protect super-canopy (Tyrell *et al.* 1998) or other identified congregation roost trees along major river corridors, lakes, and lands managed by the WNF, in addition to adhering to standards and guidelines outlined in the Forest Plan for riparian corridors.

In order to minimize potential impacts of smoke inversion to occupied communal night roosts, daytime concentration sites, or occupied breeding territories, it is necessary to:

6. Consider all bald eagle communal night roosts, daytime concentration sites, or breeding sites (if and when discovered on the WNF) as occupied bald eagle sites. Prescribed fires should not be conducted within ½ mile of occupied bald eagle sites. In order to prevent smoke inversion from occurring at all occupied bald eagle sites, WNF should conduct any planned prescribed fire (in areas outside the ½ mile radius of occupied sites) only when the following have been considered: wind direction, speed, mixing height and transport winds needed in burn planning and implementation, to minimize smoke from drifting toward any occupied sites.

7. By June 1 of each year, provide an annual report to Reynoldsburg Ohio Field Office, that includes any documented case of a prescribed fire that behaved contrary to predicted movement patterns and which resulted in a confirmed adverse impact to bald eagles.

8. For any prescribed fire that could potentially impact Bald eagles, provide Reynoldsburg Ohio Field Office with the opportunity to review burn plans with Wayne National Forest Fire Management Officer prior to the burn plan being approved.

9. Should the bald eagle be found on the Wayne National Forest, populations should be monitored and managed as directed by this biological opinion and the species delisting monitoring plan for a period of five years after delisting (USFWS, 2001)

Relationship to Other Documents and Laws

The legal background and authority for Forest Plan amendments is found in the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) as amended by the National Forest Management Act of 1976 (NFMA), implementing regulations found in 36 CFR Part 219.10 (f), the National Environmental Policy Act (NEPA), and implementing regulations found in 40 CFR 1500-1508. Direction specific to who is responsible and why and how to amend it is described in Forest Service Manual 1922 and Forest Service Handbook 1909.12 Chapter 5.

The proposed amendment is programmatic in nature; that is, it provides overall guidance for management of the Forest rather than a specific project at a particular location. Further

environmental analysis will be conducted for subsequent site-specific projects that implement the proposed Forest Plan amendment. The Forest Supervisor is the authority in determining whether amendments are significant or not significant (36 CFR 219.10). This determination of significance is made under the direction found in 16 U.S.C. 1604(f)(4), 36 CFR 219.10(f), and Forest Service Manual (FSM) 1922.5. To meet the definition of significant, an amendment must meet both of the following criteria found in Forest Service Manual (FSM) 1922.5:

(1) It must substantially alter the long-term relationship between the outputs of multiple-use goods and services (i.e., wildlife habitat, recreational opportunities, timber products) originally projected; and

(2) It must have an important effect on the entire Forest Plan or affect the land and resources throughout a large portion of the planning area during the planning period.

The Forest Supervisor has followed these procedures and has determined that this is not a significant amendment to the Forest Plan because it does not meet both of the required definitions of significance found in Forest Service Manual (FSM) 1922.5.

(1) Forest Plan Goals, Objectives and output are listed on pages 4-1 through 4-6 of the Forest Plan. The proposed amendment would not change any of these Goals, Objectives and Outputs of the Forest Plan, as it currently exists with 12 completed amendments.

(2) The proposed amendment would apply to future decisions throughout the planning area until September 2006. The proposed amendment would not change or alter the existing management area designations, the desired future condition of the Forest, or the anticipated goods and services to be produced.

See Appendix D for further discussion of the significance of this amendment.

Decision Framework

The Forest Supervisor of the Wayne National Forest will make the following decisions based on the interdisciplinary analysis presented in this Environmental Assessment.

- Should the Forest Plan be amended as proposed?
- Should the Forest Plan amendment go beyond the proposed action to include Conservation Recommendations, made by the Fish and Wildlife Service, that are discretionary and are intended to help implement species recovery plans?
- Is this a significant amendment as defined by the National Forest Management Act?
- Will this action result in a significant environmental impact as defined in the National Environmental Policy Act.
- Should the Forest Plan be amended at this time?

Issues Related to the Proposed Action

Issues and management concerns related to the proposed action were identified through a scoping process that included both internal and public comments. A letter asking for comments was mailed to the Wayne National Forest's list of interested parties on December 13, 2001. The mailing list included approximately 160 individuals and organizations that had expressed interest in Forest actions. The letter contained the purpose and need for this action and described the proposed action. A second letter asking for clarification of issues was mailed to two of the respondents on May 2, 2002.

A Public Notice notifying the public of the proposal and requesting their comments was published in The Messenger (Athens, Ohio) on December 18, 2001.

Specific comments, issues, and concerns were identified from these sources. Responses were received as written letters, telephone calls, and personal contacts. A list of those groups or individuals that responded is listed in Appendix A. The interdisciplinary team evaluated each comment to determine how it should be addressed. The results of the evaluation are displayed in Appendix A.

Three major issues were identified from public and internal comments. These issues served as a basis for evaluating the alternatives, including the proposed action. These issues were also used to assess environmental consequences.

Issue 1--Effect on Resource Management and Production

Some people raised concerns that the Proposed Action could affect the management of resources on the Wayne National Forest and possibly affect the production of goods and services from the Forest resources. Comments centered on perceived effects of the amendment on oil and gas resources.

Issue 2--Protection and Recovery of Threatened and Endangered Species

Some people expressed concern that the Proposed Action would not minimize the potential incidental take of Indiana bat and bald eagle. Additional direction could be added to promote the protection and recovery of the Indiana bat, bald eagle and the American burying beetle. Specifically, they expressed concern that allowing logging, including seasonal logging, in T&E species habitat would do nothing to protect the Indiana bat. They stated that pesticide use should be banned anywhere near a listed species. They stated concern that Indiana bat hibernacula were not being adequately protected under the proposal. They proposed that the Forest consider an alternative that ends all logging on the Forest.

Issue 3--Consistency of Forest Plan Information and Direction

Some people were concerned that there is some information and direction in the Forest Plan that needs to be clarified or updated to be consistent with the Proposed Action.

Chapter 2. Alternatives

Process used to develop alternatives

Following public scoping and comment period, the interdisciplinary (ID) team met and discussed issues and alternatives. Given the issues, the team developed three alternatives that respond to concerns. All of the alternatives respond to issue 3, the need to update the Forest Plan so that all sections are consistent with the Proposed Action. The proposed action is called Alternative A. This alternative would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions contained in the Biological Opinion (BO) as Forest Management Goals and Forest-wide Standards and Guidelines in the Wayne Forest Plan. As the Terms and Conditions were the result of formal consultation with the Fish and Wildlife Service they must be followed and are non-discretionary without reopening formal consultation. The no action alternative is called Alternative B. Alternative C was developed in response to issue 2, the Plan amendment should go beyond the Proposed Action to promote the protection and recovery of the Indiana bat, bald eagle and the American burying beetle.

Alternative A (Proposed Action). Required level of protection.

The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions, contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition, existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.

Alternative B. No Action.

The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Alternative C. Enhanced level of protection and Conservation Recommendations.

This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan

direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate.

Alternatives not considered in detail

There were three alternatives that were proposed in comments to scoping. They were similar in that they all proposed that the Forest Service undertake actions that go beyond the Reasonable and Prudent Measures and Terms and Conditions.

The Fish and Wildlife Service, the Federal agency charged with the enforcement of the Endangered Species Act, determined that continued implementation of the Forest Plan, as amended, (including logging as described in Forest Plan Amendment 11) would not jeopardize any of the listed species during the 5-year period that the BO covers.

> "After reviewing the current status of the Indiana bat, the bald eagle, the American burying beetle, the environmental baseline for the action area [the Wayne National Forest], the effects of the continued implementation of the existing [Wayne] Forest Plan, and the cumulative effects, it is the [Fish and Wildlife] Service's biological opinion that the continued implementation of the existing Wayne NF's Forest Plan is not likely to jeopardize the continued existence of the Indiana bat, bald eagle, and American burying beetle. No critical habitat has been designated for these three species in the action area; therefore, none will be affected." (USDI 2001, pgs 33-34)

This finding was based, in part, on Forest Service information provided in the Biological Assessment and through formal consultation as prescribed by the Endangered Species Act. The Biological Assessment contains a review of the pertinent literature describing the life histories and habitat requirements of the Federally listed species and an assessment of the impacts of the various activities proposed in the Forest Plan. Based on this analysis, the Forest Service concluded that while some actions could have adverse impacts on these species the total amount of suitable habitat would remain unchanged. The Forest Service further concluded that any adverse impacts that could result from its actions would be minimized through the utilization of the measures that are the Reasonable and Prudent Measures and Terms and Conditions in this proposal. The comments received during scoping did not provide any new information that would cause the Forest Service to revise these conclusions.

1. An alternative proposed by a member of the public was to reduce or eliminate logging to adequately protect the Indiana bat.

> Timber harvest can have both a positive and negative impact on the Indiana bat (USFS, 2001). Selective harvest of trees may temporarily benefit the Indiana bat. The more open canopy created by uneven-aged harvest and commercial thinning would allow additional sunlight to penetrate the forest, creating more sun-exposed maternity colony trees. Removing most of the canopy cover, but allowing standing dead trees to remain has probably made those areas more suitable for Indiana bat roosting and foraging (USFS, 1998). Clearcut areas potentially provide travel corridors and areas of high insects production along forest edges (USFS, 1998). The increased amount of prey would benefit Indiana bat and encourage its use of the Forest.

The removal of trees through timber harvest presents the potential for removal of current or future male roost trees and maternity colony trees. The Terms and Conditions, however, are in tended to mitigate these impacts.

Based on the above, the Forest Supervisor has determined that any further reduction or elimination of logging on the Forest would not be consistent with the management direction established in the amended Forest Plan and would not provide increased protection for these threatened and endangered species. The reduction or elimination of logging on the National Forest is a broad change that is well beyond the scope of this environmental analysis and would be more appropriately addressed during Forest Plan revision.

2. Another alternative proposed by two members of the public was that the amendment should provide more protection for listed species through rewording Terms and Conditions to place more restrictions on Forest Service activities and to allow less Forest Service discretion.

This suggestion either did not, in the case of one response, propose any specific actions to increase the level of protection or did not, in the other case, provide evidence as to how actions would result in increased protection for the species. Based on a review of the pertinent information contained in the Biological Assessment (USFS 2001a), the Forest has determined that the continued implementation of the Forest Plan is not likely to jeopardize the existence of the listed species. The Fish and wildlife Services has agreed with this determination (USFWS, 2001). The Forest Supervisor has determined that any further reduction or elimination of management activities on the Forest would not be consistent with the management direction established in the amended Forest Plan and that any additional restrictions on Forest management activities would not be warranted in the context of this Plan Amendment.

3. Another concern was that Forest Plan Amendment 11 eliminates even-aged management and that research supports that the Indiana bat needs early successional habitat. The alternative proposed was that the amendment should provide for increased early successional habitat.

Even-aged timber harvest using clearcuts could adversely affect foraging habitat for the Indiana bat. Clearcutting results in a large area devoid of canopy cover, which is not preferred by the male and female bats during foraging. This impact last until regeneration of trees creates a more closed canopy (USFS, 1998).

Based on this information the Forest Supervisor has determined this alternative would not provide increased protection for these threatened and endangered species. The continued implementation of the Forest Plan is not likely to jeopardize the existence of the listed species. Early successional habitat is a complex issue that should be addressed through the Forest Plan revision process. The Forest Service will continue to manage for a diversity of habitats that will support the greatest diversity of plants and animals

Chapter 3. The Affected Environment and Effects Analysis

Affected Environment

The Wayne National Forest Land and Resource Management Plan is the product of a comprehensive notice and comment process established by Congress in the National Forest Management Act (NFMA). Approval of the Forest Plan established direction so that all future planning decisions use an "interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other sciences." The Forest Plan also provides direction to assure coordination of the six multiple-uses (outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness) and sustained yield of products and services.

The Forest Plan resulted in:

1. Establishment of forest multiple-use goals and objectives,
2. Establishment of forest-wide management requirements (standards and guidelines) that apply to all future activities,
3. Establishment of management areas and management area direction (management area prescriptions) that apply to all future activities in that management area,
4. Designation of suitable timber land and establishment of allowable timber sale quantity (the allowable sale quantity is the maximum amount of timber that can be sold in a decade),
5. Establishment of monitoring and evaluation requirements, and,
6. There were no recommendations to Congress for Wilderness or Wild and Scenic River designation.

The Regional Forester signed the Land and Resource Management Plan for the Wayne National Forest in January of 1988. Forest Plan implementation began immediately. As projects and activities are proposed and reviewed, the Forest Plan is used to guide project level decision-making. The Forest Plan management area prescriptions and Forest-wide direction are the framework under which future decisions are made. Coupled with other environmental laws and regulations, the Forest Plan creates a management system for future decision-making.

Forest Plans are adjustable through monitoring and evaluation, amendment and revision (Forest Plan level decision making). The Wayne's Forest Plan has been amended twelve times since it was adopted. The amendments corrected a typographical error (amendment no. 1), eliminated M.A. 9.1 (amendment no. 2), changed stream crossing standards (amendment no. 3), expanded and clarified motorized use standards (amendments no. 4 and 5), strengthened the forest's position on retaining the Little Muskingum as a free flowing river (amendment no. 6), reclassified several areas as special use areas—M.A. 8.2 (amendments no. 7, 9, 10, and 12), change the Plan vegetation management projections and implementation schedule (amendment no. 11) and changed forest wide guidance for management of special uses, minerals and geology, and land acquisition priorities (amendment no. 8). Amendment 8 is the only one of the twelve amendments that was significant.

The Wayne National Forest is located within the Ecoregion Humid Temperature Domain, Hot Continental Division, Eastern Broadleaf Forest (Oceanic) Province, Southern Unglaciated Allegheny Plateau Section. The Marietta Unit of the Forest is located in the Ohio Valley Hills Subsection (USEPA Ecoregion Title: Permian Hills). Small portions of the Ironton District and Athens Unit are located within the East Hocking Plateau Subsection (USEPA Ecoregion Title: Monongahela Transition Zone); other portions of these Units are located within the West Hocking Plateau Subsection (USEPA Ecoregion Title: Ohio/Kentucky Carboniferous Plateau) (USFS, 2001).

The Wayne National Forest is part of the mixed mesophytic forest region. Of the approximate 230,000 acres of NFS lands within the Wayne NF, about 95 percent is forested. The remaining approximately 5 percent is in lowland and upland brush, open fields, grass, roads, and water resources. Although it contains some conifers, hardwood forest types dominate the Wayne NF. About 50.3 percent of the NFS lands are oak-hickory forest in all successional stages. Another 6.7 percent of the forest is in pine, and 5.5 percent of the forest is pine-hardwood community. Lowland hardwood comprises approximately 3 percent of the forest, while 22 percent is in upland hardwood. About 6 percent of the forest is yellow poplar (*Liriodendron tulipifera*). The remaining forested areas, approximately 2 percent of the forest, are in maple-beech communities (USFS, 2001).

The principle program areas involved in Forest Plan implementation are: Vegetation Management, recreation, land acquisition, special uses and minerals, roads and facilities, watershed restoration, and fire.

Vegetation Management. The Wayne National Forest is comprised of lands heavily impacted by centuries of past human inhabitants. Research indicates that both pre-historic and historic Native American cultures routinely burned the forest understory in order to drive game, reduce pests and create croplands near their settlements. When European settlers arrived in Ohio in the late 18th Century, they found a mature forest canopy over a prairie-like forest floor, which provided forage for bison, deer and elk. The settlers cleared large areas of forest to carve out subsistence farms, using the lumber to build homes and warm their hearths. Later, industries cut down swaths of forests to fuel the furnaces of the Industrial Revolution. Miners removed iron ore, coal, clay, sand, gravel and salt from region, each leaving behind a unique brand. When the Forest Service began to acquire land in Southeast Ohio during the 1930s, much of the land was no longer suitable for farming because of erosion and the underground mineral wealth had been deleted. Early conservation efforts were directed at halting the erosion and planting a new forest, typically with groves of pine species.

The USDA Forest Service Strategic Plan (2000 Revision) includes several objectives to achieve the goal of ecosystem health and sustainability. Sustainability includes ecological, social, and economic components. By managing for ecological sustainability, forest ecosystems will be healthy, resilient, and sustainable in the long term and will provide a sustainable flow of goods and services that help maintain the social and economic components of the ecosystems. Managing for ecological sustainability requires an integrated management approach that considers natural processes such as fire, insect and disease outbreaks, and catastrophic wind events, along with man induced management activities that mimic those natural events.

The Forest Plan, as amended, projects that through 2002 approximately 2 million board feet of timber will be harvested each year. 1.05 million board feet will be harvested through commercial thinning and .95 million board feet using the uneven-aged management harvest method.

Recreation. The Forest Service must meet the Nation's growing need for outdoor recreation in a manner that protects the health, diversity, and productivity of the land. Dispersed recreation demand on the Wayne National Forest is increasing. Demand is high for Off-Road Vehicle (ORV) trails, horse trails, and mountain bike trails. The current Forest Plan restricts off-road vehicle use to designated trails or use areas. The Forest Plan allows for the designation of additional trails or use areas. ORVs are restricted by Forest Plan direction to designated trails, but these trails do not seem to provide the recreational experience desired by many of these users. As a result, management areas adjacent to designated trails are riddled with illegal, user-developed trails. Fishing pressure at Forest ponds and lakes has been documented to be at least twice the state average. Hiking, backpacking, hunting, and nature viewing continue to be popular activities. While interest in primitive camping remains stable, campers using developed campgrounds are demanding more amenities, such as improved RV pads, electricity, and sewer hookups. Interest in heritage resources, especially pertaining to the Underground Railroad, found in the Wayne National Forest is increasing.

In 2002, the Wayne National Forest will complete a recreation feasibility study. The three-phase study included personal interviews with key stakeholders in gateway communities, telephone surveys with residents of four metropolitan areas surrounding the Wayne and public meetings held in gateway communities to discuss the opportunities for development of recreation facilities both public and private.

Land Acquisition. The Wayne is a growing forest, with an active lands program. In the past decade, the forest has acquired more than 50,000 acres. For a forest of more than 232,000 acres, this increase represents a large opportunity for future programs. However, there is increasing competition for the remaining undeveloped land of Southeast Ohio, from developers and land speculators. Costs per acre are rising sharply in some areas, as large tracts are subdivided.

The Wayne National Forest has excellent potential to buy both large and small tracts of land to fill in the land base within its proclamation boundary. This fiscal year, landowners have offered to the Forest far more properties than appropriated funds can accommodate. Many of these properties are also being offered to land developers operating throughout the State of Ohio, and who actively seek to subdivide these lands into small lots for mobile homes and hunting camps. The possibility of losing the opportunities to buy these acreages, that comprise the heart of the forest, could prove devastating to building a viable forest base. The Forest expects the widest opportunity window to capitalize on large and small purchases will be in the next five to eight years. The completion of highway construction through Lancaster and Nelsonville during the next few years will generate an even greater pressure from Columbus and those wishing to commute from the SE corner of the state where the Wayne is located.

Special Uses and Minerals. Oil, gas, and coalfields as well as industrial minerals such as sand, gravel, limestone, clay, shale and salt are found within the Wayne National Forest. The United

States own the rights to about 33% of these minerals with the rest in private ownership. Federal laws and policies regulate the exploration and development of the minerals within the Wayne National Forest while being consistent with other resource needs. The 1988 Forest Plan as amended recognizes oil and gas exploration and development as a suitable use of the Forest and the Regional Forester determined that the entire federally owned oil and gas mineral estate was administratively available for leasing. This decision is conditioned upon conformance with land use planning and mineral leasing processes.

Roads and Facilities.
Facilities Management: Facilities management involves the construction, maintenance and disposal of all facilities associated with the Forest Mission. This includes all Forest Administration and Organization sites (FA&O) recreation facilities, dams, bridges and water control structures, boat ramps, wells, water and waste water systems, used by the employees and the public. First and foremost the mission is to provide for the safety of the user and the public, along with the maintaining compliance with the Americans with Disabilities Act, state and local building, electrical, fire codes as they apply to the structure.

Transportation Management: The Forest transportation program involves the development, maintenance, construction and planning of the Forest road system. The system includes the all the culverts, signs, bridges, gates, and roads. The program consists of maintaining the road system with annual maintenance and assuring that the transportation system is up to safety standards and is performing in such a manner that not degrading the natural environment.

In addition to these activates the Forest administers the Forest Highways program with the State DOT and Federal Lands Highways Administration. This program returns money to the state and county road authorities through a formula based on gas tax receipts from use of forest roads based on miles of roads, population of the state and land ownership acres in the state. This money allows for the construction and maintenance of the Forest Highway system within the Forest that is administrated by County and State authorities through agreement by the Forest.

Working with local governments and others through agreements with state and private individuals to supplement the Forest Development Roads allows the Forest to both collect funds from third parties who use the Forest road system and allows for the Forest Service to pay for the use of roads not on its system, but form much of the Forest's transportation system.

Watershed Restoration. The Wayne NF has partnered with other federal agencies, the State of Ohio and local non-profit organizations to address water quality concerns created by historic coal mining practices. Several of these approaches are unique experiments that have the potential to become models for other regions of Appalachian coal fields that are now addressing acid mine drainage. An inventory of the Forest has identified more than 5,500 old underground mine features.

The following summarizes the primary restoration activities proposed for the next five years:

- Subsidences: A subsidence is a land feature where the land collapses due to deterioration of subsurface support, allowing surface water to enter underground

mines and become the source of acid mine drainage. In order to correct subsidence problems, the Forest is implementing an aggressive program to fill them in and restore stream flows.

- Biological Remediation: The Forest is contracting with a researcher to test the use of biological agents to remove iron and other metals from water. Economic recovery of these metals is also being explored.
- Natural Wood Fiber Filters: Working with the Forest Service' Forest Products Lab, the Wayne is testing the use of wood fiber filters to remove iron and other minerals from AMD. Wood fiber filters that have become saturated with iron deposits may be used to remove phosphates from other wastewater sources such as dairy farms.

Fire. The WNF Fire Management Program consists of a variety of activities. These activities are divided into two actions-Wildland Fire Suppression and Hazardous Fuels Management.

Wildland fire related activities include the following:

- Prevention – Personnel on the ground assessing risk, values, and potential for the ignition and severity should a wildfire occur in a given area.
- Pre-suppression – This activity can involve the establishment of control lines, the mowing or improvement of existing lines, identification, posting and/or flagging of known hazards in a given area utilizing tractors, weed eaters.
- Suppression – The Emergency action initial attack, reinforced and extended attack and extinguishments of a wildfire. Can include the use of heavy equipment such as dozers, front-end loaders and suppression engines (fire trucks). Also may involve the use of a variety of aircraft, both fixed and rotary wing, light and heavy, specialized suppression equipment such as ATV's and the use of crews with hand tools (shovels, rakes, axes, etc.), chainsaws, leaf blowers and backpack pumps. The use and application of approved fire foam and/or surfactants may also occur.
- Investigation and Reporting – Examination of the fire scene to determine the origin and the cause of the wildfire. Activities include the removal of fuel layers in search of evidence. Tools and equipment utilized are ATV's, hand tools and marker stakes.
- Emergency Rehabilitation/Stabilization – Reseeding, the establishment of erosion controls where necessary, and any specialize actions required by the situation.

Hazardous Fuels Management can entail either prescribed fire or mechanical fuel treatments.

Prescribed Fire:

- Research, Planning – Conducting field studies to assess the fuel loading, types and volume, involves the use of vehicles like pickup trucks, ATV's and hand tools.
- Layout and Construction of Control Lines – Identify the route and developing/constructing the lines normally utilizing a crew with hand tools (shovels, rakes, axes etc.), ATV's, and on occasion improvement or enhancement of existing right-of-ways and/or roads with heavy equipment such as road graders.
- Ignition, Holding and Mop-up – Igniting the fire using aerial or hand held ignition devices such as fusses, fire torches, flamethrowers etc. Keeping the fire from escaping control perimeters using various aircraft, ATV's, hand crews with hand tools, saws etc. Utilizing the same techniques during mop-up, which is extinguishing the residual fire.

Mechanical Fuels Mitigation:

- Trimming, Thinning and/or Removal – Reduce excess volumes of hazardous fuel from ignition prone areas. Uses a variety of mechanized equipment such as brush cutters mounted on tractors, chainsaws, chippers and brush cutters.

Effects Analysis

This section presents the effects of implementing each alternative. The effects are presented in response to the issues and concerns identified earlier. Knowing the expected consequences of proposed activities gives the decision maker a basis for selecting which actions to implement. The need for an environmental impact statement is based on what environmental effects are expected from the proposed actions. The following effects are discussed because they are related to the major issues: 1. The effect of the proposed Forest Plan amendment on resource management and production. 2. The protection and recovery of endangered species. 3. The consistency of Forest Plan information and direction. The effects analysis for Issue 1--The effect of the Forest Plan amendment on resource management and production-- will focus on the principle program areas involved in Forest Plan implementation: vegetation management and ecological restoration, recreation, land acquisition, special uses and minerals, roads and facilities, watershed restoration, and fire. The remaining two issues will be discussed in more general terms.

Summary of Effects

The following two tables summarize the consequences to the Forest program areas of implementing the three alternatives and how the alternative's response to the purpose and need and significant issues.

TABLE 1. SUMMARY OF PROGRAM AREA EFFECTS BY ALTERNATIVE.

Program Area	Alternative A-Proposed Action	Alternative B-No Action	Alternative C- Enhanced level of protection and Conservation Recommendations
Vegetation Management and Ecological Restoration	The proposed action would have a minimal impact in the Forest Plan as amended. May marginally reduce the economic viability of timber sales and increase the costs for planning, marking, and administration of timber sales. Another effect is a possible increased cost of implementing projects because of the additional requirements for surveys, record keeping and monitoring.	Failure to implement the Reasonable and Prudent Measures and Terms and Conditions would not meet the requirements of the incidental take permit and could place the Forest in violation of the ESA unless Forest entered into formal consultation with USFWS for each project. The possibility of having to enter formal consultation for some projects would extend the time needed to complete projects.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action, except Conservation Recommendations to benefit the American burying beetle could restrict road construction, re-construction, and maintenance. Additional monitoring and survey requirements would cause a greater impact then expected from the Proposed Action.
Recreation	Minimal effects would be expected, though there is a slight possibility that trails or other facilities would have to be relocated should Indiana bat hibernacula or eagle roosts be discovered.	Failure to implement the Reasonable and Prudent Measures and Terms and Conditions would not meet the requirements of the incidental take permit and could place the Forest in violation of the ESA unless Forest entered into formal consultation with USFWS for each project.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action. Conservation Recommendations to benefit the American burying beetle could restrict road construction, re-construction, and maintenance.
Land Acquisition	No effect.	No effect	No effect
Special Uses and Minerals	Minimal effects would be expected, though there is a slight possibility that some activities would have to be curtailed should Indiana bat hibernacula or eagle roosts be	The possibility of having to enter formal consultation for some projects would extend the time needed to complete projects.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action, except Conservation Recommendations to

	discovered.		benefit the American burying beetle could restrict road construction, re-construction, and maintenance.
Roads and Facilities	Minimal effects would be expected, though there is a slight possibility that roads or other facilities would have to be relocated or road construction limited should American burying beetles, Indiana bat Hibernacula or Eagle roosts be discovered.	The possibility of having to enter formal consultation for some projects would extend the time needed to complete projects.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action, except Conservation Recommendations to benefit the American burying beetle could restrict road construction, re-construction, and maintenance.
Watershed Restoration	Minimal effects would be expected, though there is a slight possibility that some projects would have to be curtailed should Indiana bat hibernacula or eagle roosts be discovered.	No effect for most activities, although the possibility of having to enter into formal consultation for some projects exists.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action.
Fire	Minimal effects would be expected, though there is a slight possibility that prescribed burns would have to be curtailed should Indiana bat hibernacula or eagle roosts be discovered.	No effect for most activities, although the possibility of having to enter into formal consultation for some projects exists.	The added protection Conservation Recommendations would not impact this program area beyond what is expected from the Proposed Action.

TABLE 2. SUMMARY OF HOW ALTERNATIVES RESPOND TO PURPOSE AND NEED AND SIGNIFICANT ISSUES.

	Alternative A-Proposed Action	**Alternative B-No Action**	**Alternative C- Enhanced level of protection and Conservation Recommendations**
Purpose and Need	Responds to Purpose and Need	Does not respond to Purpose and Need	Responds to Purpose and Need
Issue 1--Effect on Resource Management and Production	Minimal to moderate impact (see Table 2)	Major impact (see Table 2)	Moderate impact (see Table 2)
Issue 2--Protection and Recovery of Threatened and Endangered Species	Addresses protection	Does not address protection or recovery	Meets protection goals, enhances recovery actions
Issue 3--Consistency of Forest Plan Information and Direction	Addresses Forest Plan consistency	Does not address Forest Plan consistency	Addresses Forest Plan consistency

Effects of the Proposed Action (Alternative A)

The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions, contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition, existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.

This alternative responds to the purpose and need for the amendment. It will have a minimal to moderate impact on resource management and production for the vegetation management, recreation, and minerals programs (Issue 1) and meet the protection goals that are the Reasonable and Prudent Measures and Terms and Conditions presented in the Biological Opinion (Issue 2). This alternative addresses Forest Plan consistency by removing conflicting or out-of-date information (Issue 3). This alternative represents the minimum action that the Forest must take to remain in compliance with the Endangered Species Act.

Direct and Indirect Effects

In general, implementation of the terms and conditions will have a minimal impact on Forest programs. The Reasonable and Prudent Measures and Terms and Conditions by requiring an accounting of the "take" associated with Forest projects will result in an increase in the administrative activities necessary to carry out a project. The nature of the activities and projects themselves will not change from that envisioned in the existing plan, as amended. The environmental effects of these actions and projects have been fully disclosed and analyzed in the environmental analysis conducted for the Forest Plan (USFS 1987).

Vegetation Management.

Impact of Terms and Conditions on Vegetation Management Projects

The following summarizes the impact of implementing the Reasonable and Prudent Measures and Terms and Conditions of the BO by determining to what extent they would alter a sale designed using the existing Forest-wide Standards and Guidelines in the Forest Plan. This project is typical of the type and scale of vegetation management project that would be implemented under the current Forest Plan. The Forest's silviculturist and District wildlife biologist completed a study that it demonstrates that applying the Reasonable and Prudent Measures and Terms and Conditions to future vegetation management projects will have no environmental impacts beyond those disclosed and analyzed in the DEIS for the Forest Plan.

In November 2001, Wayne National Forest employees took 10 sample basal area plots in Cutting Unit #1 on the Bluegrass Timber Sale, and 10 plots in Unit #1 of the Markin Fork Sale (USFS 2001b). The entries under Bluegrass and Markin Fork (Table 3) represent what would remain in the stand after harvesting the timber and after deducting from the sale any trees which must be left to provide Indiana bat roosting habitat (i.e. shagbark and shellbark hickory over six inches dbh, all trees over six inches dbh that are hollow, have major splits or broken tops, and any trees over six inches dbh which have died since originally being marked to be cut).

TABLE 3. SUMMARY OF IMPACTS FROM IMPLIMENTING THE TERMS AND CONDITIONS ON A TYPICAL VEGETATION MANAGEMENT PROJECT

Item	BO Requirement	Bluegrass	Markin Fork
Canopy cover	60%	82% stocking	79% stocking
Trees/acre > 6" dbh with loose bark	12	1.8*	0**
Preferred trees/acre > 20" dbh	3	3.3	3.8
Preferred trees/acre >11" dbh & <20" dbh	6	36.7	5.0*
Dead trees/acre > 6" dbh	All	13.6	4.2
Shaggy hickory/acre > 6" dbh	All***	0**	2.6
Hollow, split, broken trees/acre > 6" dbh	All***	1.8	0.5

* None marked to be cut
** None found in sample plots
*** Can cut only in hibernation season

Percent canopy cover is not equivalent to percent stocking, but they are reasonably comparable. In a study by Ohio University of canopy cover remaining in Bluegrass sale Unit #2 the summer after it was cut, the average was 84%, with a minimum of 74% (McCarthy 1997). Since the other units were all marked with similar guidelines, the assumption can be made that at least 60% canopy cover would be left. Note: taking sample plots revealed that while the original marking guidelines called for leaving 70 to 80 basal area, Bluegrass was actually marked only to 105, and Markin Fork to 99. In other words, more trees could have been marked and still been within the guidelines.

Only two trees with large areas of loose bark (both white oaks on the Bluegrass sale) were found in the sample plots (equal to 1.8 trees per acre). Neither tree was marked to be cut. 3.7 preferred species trees per acre over 20 inches dbh were found on the Bluegrass sale, and 5.4 on Markin Fork. After cutting, 3.3 would be left on Bluegrass and 3.8 on Markin Fork, above the three required by the BO. The only preferred species over 20 inches dbh found in the sample plots were red oak, white oak and white ash. Other, smaller, preferred species trees also included shagbark hickory and shellbark hickory. 45.6 preferred species trees per acre between 11 inches and 20 inches dbh were found on the Bluegrass sale and 5.0 on Markin Fork (none of the latter were marked to be cut). After cutting, 36.7 would be left on Bluegrass and 5.0 on Markin Fork. The BO requirements are not met on either sale for trees with loose bark or on Markin Fork for the smaller preferred trees, but if the trees are not already present they cannot be created, and none were marked for cutting on the sample plots. The large number of 11 to 20 inch trees on Bluegrass is probably due to the southern aspect of the sample plot, which typically results in a larger number of smaller trees. Both sales are a mix of south and north aspects.

No dead trees were originally marked to be cut in the sales, but 1.3 marked trees per acre have since died on the Bluegrass sale and 1.4 on Markin Fork, according to the sample plots, and would need to be deducted from the sales. Both marked and unmarked dead trees total 13.6 on Bluegrass and

4.2 on Markin Fork. The larger number for Bluegrass is due to a number of small dead trees (eight inches dbh). No hickories were marked to be cut. No shagbark or shellbark hickories were found in the sample plots on the Bluegrass sale; 2.6 per acre were found on Markin Fork. Two trees were found that were hollow, and two with broken tops. No trees with major splits were found. One of the trees with a broken top (on Bluegrass, equal to 0.6 trees per acre) was marked to be cut, and would need to be deducted from the sale.

In March 2002, Wayne NF employees completely remarked both the Bluegrass and Markin Fork timber sales, applying the BO requirements (Forest Service 2002b). A total of 102 trees that could provide Indiana bat roosting habitat were deducted from the Bluegrass sale, and 187 trees were deducted from the Markin Fork sale. Approximately 90% of these trees were deducted because they were dead; the remainder was potential bat roosts because they were hollow, had major splits, broken tops, or large areas of loose bark. Deducting the trees resulted in a 3% volume reduction for Bluegrass, from 596 to 580 mbf, and a 5% volume reduction for Markin Fork, from 608 to 578 mbf.

In terms of environmental effects, implementation of the Reasonable and Prudent Measures and Terms and Conditions of the BO to the Bluegrass and Markin Fork Timber Sales would not substantially alter the ecological consequences of the approved activities. Approximately 90% of the trees that would need to be deducted from the sales to protect the Indiana bat would be deducted because they have died since originally marked to be cut. The remaining trees would be deducted because they are hollow, have broken tops, major splits or large areas of loose bark. Only about 10% of the trees that would need to be deducted from the sales because they provide Indiana bat roosting habitat would still be alive. This small amount of trees would not have a measurable effect on the environment.

Plant and Animal Communities

The Indiana bat Reasonable and Prudent Measures and Terms and Conditions call for maintaining adequate canopy cover in hardwood stands to provide foraging habitat, specifically calling for at least 60% canopy cover. This requirement directly affects the amount of early successional habitat that could be created via silvicultural methods, although some lands may be acquired which possess early successional habitat. Plant and animal species dependent on early successional habitat may be indirectly affected by the decreased amount of early successional habitat.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions protect snags. Snags over 6 inches dbh are not to be removed unless they pose an imminent threat to human safety. Likewise, snags are not to be removed for Timber Stand Improvement or firewood cutting purposes. Protection Indiana bat Reasonable and Prudent Measures and Terms and Conditions of snags would benefit other wildlife species. Numerous species use snags for dens or nesting.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions protect known Indiana bat hibernacula. Bat-friendly gates shall be installed, as funding allows, preventing unauthorized human entry. Bat gates could limit access of larger animals, such as black bear, into mines that are found to be hibernacula. Smaller animals would still be able to access the mines. A one-quarter mile undisturbed forested buffer should be retained around all known hibernacula. Since hibernacula are associated with abandoned mines, and these mines are rocky in nature, plants animals that utilize forested, rocky habitats would benefit by enhanced protection. Early

successional habitat would not be created within one-quarter mile of known hibernacula, but could occur through natural disturbances. There is only one known hibernaculum on the Forest. Early successional habitat management would continue through group selection cuts and maintenance of permanent forest openings across other parts of the Forest. The undisturbed buffers would limit trail construction within one-quarter mile of known hibernacula. This could minimally affect animals that use the trails for foraging or travel.

Both the Indiana bat and bald eagle Reasonable and Prudent Measures and Terms and Conditions protect certain types of trees. Restrictions on cutting hickory trees and trees with bat roosting characteristics (i.e., trees that are hollow, have major splits or broken tops) benefits other wildlife species. Other species of bats, and cavity dependent birds and mammals would also use these trees. Super-canopy trees or bald eagle congregation roost trees in riparian areas are to be protected. Other species of birds will use these trees to roost or nest, and these trees provide shade and organic matter to the aquatic systems, which indirectly benefits fish and aquatic invertebrates.

The Indiana bat and bald eagle Reasonable and Prudent Measures and Terms and Conditions will have no effect on aquatic plants and animals. Bald eagle Reasonable and Prudent Measure 1 and Terms and Conditions 2 and 5 address the protection of bald eagle roosting habitat. Since the bald eagle most often roosts along water bodies, the protection of super-canopy riparian trees can have beneficial effects to riparian-dependant and aquatic species. Riparian trees provide shade and organic nutrients to the aquatic system, which help maintain optimal water temperature and supplement the food base.

Impact on Vegetation Management Program

The proposed amendment will have minimal direct and indirect effects on the Forest Plan as Amended. The USFWS (USFWS, 2001) determined that the level of anticipated take of Indiana bats is not likely to result in jeopardy to the species. In the USFWS opinion, incidental take of Indiana bats will occur in the form of harm through habitat loss. Term and Condition 6 displays the level of incidental take used by the USFWS to render their opinion. These levels of incidental take include: 2,250 acres of hardwood thinning and uneven aged cuts; 250 acres of pine thinning, and 2,500 acres of timber stand improvements. This amount of harvest is not significantly different from that proposed in the amended Forest Plan.

There could be a small increased cost to implement projects because of the additional survey and monitoring requirements. The proposed amendment could increase the amount of time to plan, implement, and monitor projects. Implementation of the Terms and Conditions will increase the amount of record keeping and monitoring to insure that they are followed.

The Terms and Conditions for the Indiana bat could marginally reduce the economic viability of timber sales. The requirements to retain large and potentially valuable trees could modestly reduce the dollar amount bid for timber sales. The additional effort needed to locate and mark these retained trees could slightly increase the costs for planning, marking, and administration of timber sales.

Recreation

Snags, dead standing trees that present a safety hazard need to be removed from campgrounds and along trails. Limits on the number of snags that can be removed or the time of year when they can be removed could conflict with safety concerns. The Terms and Conditions limit snag removal to 125 trees over the 5-year period of the Incidental Take Permit. Formal consultation would have to be reinitiated if snag removals exceed the level in the BO. This number applies to snags removed when the Indiana bat is not in the hibernacula.

The Terms and Conditions also limit the amount of disturbance associated with trail (Horse, foot, or ORV) to 160 acres over 5 years. Should Indiana bat hibernacula or bald eagle roosts/nest sites be discovered in the future, recreation trails or sites may need to be moved or construction plans altered. This is of special concern given the limited land area and the fragmented ownership of National Forest land. We do not, however, anticipate that these concerns will have any significant effects on the Forests recreation program.

Land Acquisition

Implementation of the Terms and Conditions would have no substantive impact on the land acquisition program. Forest policy could be changed to make a priority to purchase land known to contain an Indiana bat hibernacula or bald eagle nesting site and the land surrounding an Indiana bat hibernacula or bald eagle nesting site.

Special Uses and Minerals

There are two types of minerals that are managed by the Forest--private mineral rights and public mineral rights. Private minerals are found when the federal government administers only the surface. Public minerals are found when the federal government administers both the surface and the subsurface mineral estate.

Private minerals management could be affected by the additional timelines and consultation requirements that will be needed to plan and implement a project could conflict with regulations governing procedures used to grant access to private property. These rules and regulations allow the Forest Service a maximum of 60 days to review and develop conditions for the use of the surface of the land to access private minerals. This time requirement could conflict with the amount of time needed to implement the following Terms and Conditions:

> "To ensure that the exemption of incidental take is appropriately documented the Fish and Wildlife Service will implement a tiered programmatic consultation approach. As individual projects are proposed under the Forest Plan, Wayne National Forest shall provide project-specific information to Reynoldsburg Ohio Field Office that (1) describes the proposed action and the specific area to be affected, (2) identifies the species that may be affected, (3) describes the manner in which the proposed action may affect listed species, and the anticipated effects, (4) specifies that the "anticipated effects from the proposed project are similar to those anticipated in the programmatic biological opinion," (5) a cumulative total of take that has occurred thus far under the tier I biological opinion, and (6) describes any additional effects, if any, not considered in the tier I consultation."

> "The Fish and Wildlife Service will review the information provided by the Wayne National Forest for each proposed project and this project-specific review is appropriately documented. During this review if it is determined that an individual proposed project is not likely to adversely affect listed species, the Fish and Wildlife Service will complete its documentation with a standard concurrence letter that refers to this Biological Opinion, the tier I programmatic document (i.e., it "tiers" to it), and specifies that the Fish and Wildlife Service concurs that the proposed project is not likely to adversely affect listed species or designated critical habitat. If it is determined that the proposed project is likely to adversely affect listed species or designated critical habitat, then the Fish and Wildlife Service completes a tier II biological opinion with a project-specific incidental take statement."

The Terms and Conditions further limit the amount of disturbance associated with minerals development to 2125 acres over the next five years. We do not, however, anticipate that these constraints will have any significant impact on the Forest's special use and minerals program.

Public minerals management would not be significantly impacted. The new standards and guidelines could, however, restrict the development of publicly owned minerals where the development could impact listed species.

Roads and Facilities

Should Indiana bat hibernacula or bald eagle roosts/nest sites be discovered in the future, forest roads or facilities may need to be moved or construction plans altered. This is of special concern given the limited land area and the fragmented ownership of National Forest land. Trees that present a safety hazard will still need to be removed in keeping with the terms and conditions in the BO. The Terms and Conditions limit the amount of disturbance associated with permanent road construction to 32 acres and temporary road construction to 37 acres over the next five years.

Watershed Restoration

Impact on the watershed program would occur only if Indiana bat hibernacula or bald eagle roosts/nest sites are discovered in the vicinity of acid mine drainage remediation or other restoration projects.

All remediation actions would then be subject to the terms and conditions in the BO.

- Before backfilling any mine openings, such as a portal entrance or subsidence depression with a developed opening, a survey for potential bat presence will be required during the fall swarming period. This period usually falls between mid-August to mid-October. The survey is optional if the closure will be accomplished by installing a bat-friendly gate.
- Any bald eagle communal night roosts and concentrations (including nests) discovered during winter surveys or during any additional field surveys of proposed project areas, shall be protected following guidelines outlined in the Northern States Bald Eagle Recovery Plan (USDI FWS 1983).

Fire
The prescribed burn program could be affected if Indiana bat hibernacula or bald eagle roosts/nest sites are discovered in the vicinity.

All prescribed burns would then be subject to the terms and conditions in the BO.

- Consider all bald eagle communal night roosts, daytime concentration sites, or breeding sites (if and when discovered on the WNF) as occupied bald eagle sites. Prescribed fires should not be conducted within ½ mile of occupied bald eagle sites. In order to prevent smoke inversion from occurring at all occupied bald eagle sites, WNF should conduct any planned prescribed fire (in areas outside the ½ mile radius of occupied sites) only when the following have been considered: wind direction, speed, mixing height and transport winds needed in burn planning and implementation, to minimize smoke from drifting toward any occupied sites.
- By June 1 of each year, provide an annual report to Reynoldsburg Ohio Field Office, that includes any documented case of a prescribed fire that behaved contrary to predicted movement patterns and which resulted in a confirmed adverse impact to bald eagles.
- For any prescribed fire that could potentially impact Bald eagles, provide Reynoldsburg Ohio Field Office with the opportunity to review burn plans with Wayne National Forest Fire Management Officer prior to the burn plan being approved.

The Terms and Conditions further limit the amount of disturbance associated with prescribed fire to 2500 acres over the next five years.

Cumulative Effects

Incorporating the non-discretionary Reasonable and Prudent Measures and Terms and Conditions of the BO, reduces the chance that incidental take will occur. This means there is less potential to harm individual(s), than under the No Action Alternative. Habitat components considered important for Indiana bats will be conserved throughout the Forest, theoretically improving both local and landscape level conditions for this species.

Before settlement the forest was a mosaic of openings and stands of various ages. This variety of forest habitat produced the diversity of species that is a goal of the Forest Management Plan. The mosaic was created and maintained through a combination of natural forces, such as wind and fire, and the activities of Native Americans, who used fire as a management tool. With the coming of the European settlers a large amount of the forest was destroyed. Over the last 60 to 80 years much of the forest has returned. Long-term studies show that both the number of forested acres and size of forest trees on public and private lands have increased since 1940 (Griffith, 1993). As the forest returns and grows older it is becoming denser and more susceptible to mortality from insects and disease. Decades of fire suppression have resulted in the decline of many fire dependent species and habitat types such as the yellow-fringed orchid and remnant prairies. It is increasingly important to manage the forest to develop a mosaic that will result in the highest level of species diversity. The creation of early successional habitat may be limited in the foreseeable because of the need to maintain certain habitat characteristics for Indiana bat foraging and roosting. However, these effects would not be significant. Early successional habitat would continue to be present on

the Forest through the maintenance of forest openings, revegetation of extensive reclaimed stripmine lands, and through acquisition of open lands. Although there are limitations placed on fire management to protect the Indiana bat and bald eagle, these limitations would likely be very small in scope since they would likely occur in a small percentage of the Forest. For example, there is only one hibernaculum, and potential bald eagle roost sites and nesting sites would only be located near the Ohio River or large reservoirs. Cumulative effects specific to Federally threatened and endangered species and Regional Forester sensitive species are located under a separate heading in this chapter.

The cumulative, forest-wide effects on the soil, water and air resources of implementing any of the alternatives would be minor. This is because there would be no effects to the air quality; and the total amount of erosion and sedimentation that would occur due to implementation of any alternative would be negligible. RPMs and TCs augment the existing riparian standards and guidelines in the Forest Plan through protection of specific riparian habitat components. Therefore, since no direct or indirect adverse effects would occur to aquatic and riparian species, there are no cumulative effects expected from Alternative A.

Although implementation of this alternative could potentially impact individual recreation or special use and minerals projects the impacts would be scattered and uncommon. The opportunity also exists to design these projects so that they will not conflict with threatened and endangered species. The overall cumulative impact of this amendment on these program areas will not be significant.

Effects of the No Action Alternative (Alternative B)

If the Forest Plan were not amended at this time, management would continue under the existing Forest Plan and non-discretionary Reasonable and Prudent Measures and Terms and Conditions would be applied to site-specific projects on a case-by-case basis. The BO would be addressed during Forest Plan Revision. As plan revision will take approximately 3 to 4 years and the BO will expire in about 4 years the benefit of entering into formal consultation will be greatly diminished.

Direct and Indirect Effects

Implementation of the no action alternative would likely result in the Forest not complying with the Reasonable and Prudent Measures and Terms and Conditions of the BO. The Forest Service currently makes every effort through project planning, management practices, and mitigation to insure that its actions do harm any threatened or endangered species or their habitat. There is still a slight possibility that a Forest action could result in the “take” of an individual of one of the listed species. If the Terms and Conditions are not incorporated into the Forest Plan this could result in the Forest violating the Endangered Species Act. Violating this Act would potentially result in legal proceedings that could cause an interruption of all forest management activities. This interruption could last several months to as long as 4 or 5 years. A long interruption may have some negative effects on the Forest’s ability to provide the public with the goods and services that are expected from a national forest.

Cumulative Effects

The Forest Plan, as currently written and implemented, provides quality habitat for Indiana bat and bald eagle, but there is still a chance that specific Forest activities could result in incidental "take" as defined by the ESA. By not incorporating the non-discretionary Reasonable and Prudent Measures and Terms and Conditions from the BO, we effectively will be using existing Forest Plan guidance and incidental standards and guidelines as we develop and review individual projects. Consequently, the chance for incidental take would still remain. There are also long-term repercussions of implementing this alternative in terms of the illegality of such an action under the ESA, and the negative effects on relationships with partner conservation agencies and organizations. This alternative limits assurance that habitat conservation will be coordinated at the Forest level, and perhaps beyond.

Impacts on Forest Programs

Much of the land that is now the Wayne National Forest was heavily impacted by past mining and agricultural practices. Much of the current Forest program is aimed at correcting the past damage. Without this Plan amendment project implementation in all program areas would be slowed or halted. Projects that were moved forward would most likely require that the Forest enter into formal Endangered Species Act consultation with the FWS. This would have a major impact on both Forest and FWS staff time and could slow the implementation of needed programs and projects.

Effects of the Enhanced Level of Protection and Conservation Recommendations Alternative (Alternative C).

The alternative will provide more protection than the minimum required by the BO. Amend the Wayne Forest Plan to incorporate all of the Reasonable and Prudent Measures (as Forest management direction) and the Terms and Conditions (as standards and guidelines), and the contained in the Biological Opinion prepared by the U.S. Fish and Wildlife Service for the Wayne Forest Plan. In addition, current Forest Plan Standards or Guidelines that conflict with the Terms and Conditions and Conservation Recommendations from the BO would be revised or deleted as appropriate. This alternative will create a new Forest Plan Appendix J. This appendix will include the Conservation Recommendations from the BO and other information necessary to manage threatened and endangered species. This alternative will also incorporates new information about preferred tree species in Indiana bat Term and Condition #4. In addition, current Forest Plan Standards or Guidelines that conflict with the Terms and Conditions and Conservation Recommendations from the BO would be revised or deleted as appropriate.

Direct and Indirect Effects

The principle program areas involved in Forest Plan implementation are: vegetation management, recreation, land acquisition, special uses and minerals, roads and facilities, watershed restoration, and fire. In general, implementation of this alternative would not impact the Forest programs beyond that of the proposed action. The impacts of this alternative on components of the environment beyond those discussed under Alternative A are described below. The introduction of the Conservation Plan as Forest Plan Appendix J will provide Forest managers with a useful tool to assist in conserving threatened and endangered species and responding to the Endangered Species

Act requirements for Federal Agencies to develop a conservation program for the befit of threatened and endangered species.

Plant and Animal Communities

The effects of Alternative C are the same as displayed under Alternative A, except that under Alternative C the Conservation Recommendations from the BO would be incorporated into the Wayne National Forest's Conservation Plan as Forest Plan Appendix J. These measures are discretionary agency activities that minimize or avoid adverse effects of a proposed action on listed species, help implement recovery plans, or help develop information. The Conservation Recommendations fall into general categories of measures that promote habitat improvement, protection of individuals, inventory and monitoring, and education.

Three of the Indiana bat Conservation Recommendations encourage additional bat studies and bat identification training on the Forest. These activities would benefit other species of bats as well as the Indiana bat. The U. S. Fish and Wildlife Service also recommended that upland waterholes be created for the Indiana bat. These water sources would benefit numerous terrestrial and semi-aquatic species. One Indiana bat Conservation Recommendation encourages a quarter mile of undisturbed forested buffer be retained surrounding all openings that are known Indiana bat fall swarming sites. Because these areas would be undisturbed, there would be less human disturbance in the quarter mile areas around the fall swarming sites. Many species would benefit from the forest cover in these areas. As the swarming sites are rare, only two have been found in the Forest, and restricted to the area around open mine portals the impact of these buffer areas on early successional species would be minimal.

Two Conservation Recommendations were suggested to protect American burying beetle habitat. These encourage road maintenance, reconstruction, and construction be kept at a minimum within 10 air miles of occupied American burying beetle habitat. These road activities often require removal of trees and areas of soil compaction can increase. Roads often equate to human access to the forest areas. Minimizing maintenance, reconstruction, and construction can benefit certain species for these reasons. Certain invertebrates may benefit from an American burying beetle Conservation Recommendation that suggests pesticide use be restricted within the known range of the American burying beetle. As stated in the BO, insects may be sensitive to chemical applications. Roads have the potential to introduce sediment into aquatic systems. Minimizing road activities could reduce sedimentation of aquatic habitats, thereby resulting in a positive effect to any aquatic species.

Roads and Facilities

One American burying beetle Conservation Recommendation could impact future recreation facilities development. In order to limit American burying beetle habitat loss, the FWS recommended that improved areas, such as campgrounds, recreation areas, and trails should be planned for and constructed outside areas with known American burying beetle populations. At this time, known population areas include only the reintroduction site near Waterloo Wildlife Research Station. The Forest is studying the opportunity to reintroduce the beetle on NFS lands in the future.

Cumulative Effects

The cumulative effects displayed for Alternative A would apply to Alternative C since the same Reasonable and Prudent Measures and Terms and Conditions would be included in Alternative C. The addition of Conservation Recommendations for the Indiana bat, bald eagle, and American burying beetle will have only minimal additional cumulative effects. These effects are related to the Indiana bat Conservation Recommendation that encourages a quarter mile of undisturbed forested buffer be retained surrounding all openings that are known Indiana bat fall swarming sites. These protected forest buffer areas would limit management activities such as creation of early successional habitat. As the swarming sites are rare, only two have been found in the Forest, and restricted to the area around open mine portals. The cumulative area affected by protection of hibernacula and fall swarming sites known to occur at this time equates to about 0.6 square miles, or 380 acres. As surveys continue to occur across the Forest, additional fall swarming sites and hibernacula may be found and could raise the area of forested buffer on the Forest. Still, this area represents only 0.16% of the Forest where early successional habitat would occur by only natural means. Therefore, the cumulative impact would be minimal to early successional species.

This alternative provides for enhancement of potential endangered species habitat throughout the Forest. It also focuses energies into better understanding of habitat relationships and in sharing this knowledge with others, Forest employees and neighbors of the Forest included. The enhancement to potential habitats is limited to those areas being actively managed. The greater enhancement will be in the broadening and deepening of the knowledge base specific to threatened and endangered species, and sharing this information and knowledge with employees and neighbors. This latter effort has the potential to enhance threatened and endangered species conservation throughout the region and assisting in this species recovery.

The Forest Plan implementation from 1988 to 2000 has resulted in a mix of habitat types dispersed across the Forest. These habitats support a wide variety of wildlife species, from those needing open lands to those requiring all successional stages of forest. Reasonably foreseeable actions resulting from implementation of any of the alternatives might affect the spatial distribution of certain canopy covers, and availability (location and density) of habitat components associated with dead/dying trees and hard mast. There would, however, be no significant change in the relative amounts, or availability, of these habitat types and components across the Forest. Therefore, there would be no cumulative impact to plant and animal populations.

Federally Threatened and Endangered Species

A biological evaluation was completed to address the effects of the alternatives on federally listed species (USFS 2002a, located in Appendix B of this environmental assessment). The direct, indirect, and cumulative effects are summarized below.

Alternative A

The integration of the Reasonable and Prudent Measures and Terms and Conditions into the Forest Plan through the amendment process will:

- Reduce the impacts of incidental take of Indiana bats;
- Provide Indiana bat foraging and roosting habitat;
- Protect snags, with the exception of those posing an imminent threat to human safety;
- Ensure a continuous supply of large roost trees for bats;

- Protect all known Indiana bat hibernacula on the Wayne National Forest;
- Protect bald eagle communal/congregational roosts and concentrations, and nests;
- Discourage human disturbance where wintering bald eagles roost or congregate;
- Minimize potential impacts of smoke inversion from prescribed fires on roosts, eagle concentration areas or occupied breeding territories; and
- Increase monitoring and understanding of the species and their habitat.

The U. S. Fish and Wildlife Service determined that no incidental take is anticipated for the American burying beetle with the continued implementation of the Forest Plan; therefore no Reasonable and Prudent Measures and Terms and Conditions were required for the American burying beetle (USDI FWS 2001). Adding the Indiana bat and bald eagle Reasonable and Prudent Measures and Terms and Conditions would have no effect on the fanshell, pink mucket pearly mussel, northern wild monkshood, Virginia spiraea, running buffalo clover, or small whorled pogonia with implementation of Alternative A.

Alternative B

The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.
Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan on federally listed species, as they relate to federally listed species, are detailed in the programmatic BA (USDA FS 2001).

Alternative C

This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate. In addition to the effects displayed under Alternative A, implementing these Conservation Recommendations will:

- Enhance the knowledge of the distribution of the Indiana bat on the Wayne National Forest, including roost tree suitability and availability;
- Increase the ability to monitor the status the Indiana bat;
- Improve the technical abilities of WNF biologists;
- Enhance habitat components for the Indiana bat;
- Protect known Indiana bat fall swarming sites;
- Improve opportunities for recognition of bald eagle night roosts;

- Minimize ground disturbance during road construction, reconstruction, and maintenance activities within 10 air miles of known American burying beetle habitat;
- Limit construction of improved areas in areas with known American burying beetle populations;
- Encourage forest management activities that benefit the American burying beetle;
- Monitor American burying beetle reintroduction efforts; and
- Recommend restrictions on pesticide use within the known range of the American burying beetle on the WNF.

There would be no effect to the fanshell, pink mucket pearly mussel, northern wild monkshood, Virginia spiraea, running buffalo clover, or small whorled pogonia with implementation of Alternative C.

Cumulative Effects

Alternatives A and C minimize the impacts of the incidental take of the Indiana bat, bald eagle, and American burying beetle on a programmatic scale on the Wayne National Forest. Each incorporates the BO's mandatory Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle. For the bat these provide foraging and roosting habitat, protect hibernacula, and ensure a continuous supply of large roost trees, and for the eagle they protect roosts, concentrations and nests; discourage human disturbance in winter roost areas; minimize potential effects from prescribed fire activities; and increase knowledge of the species and its habitat requirements. Alternative C incorporates Conservation Recommendations into a Conservation Plan that enhance Indiana bat habitat components, protect known swarming areas, and focus energies on information gathering and sharing as it relates to the bat and its habitat requirements, and improve recognition of bald eagle night roosts. The Conservation Recommendations also improve protection of occupied American burying beetle habitat and increase understanding of the beetle and its distribution in southeast Ohio. However, the measures taken to protect the federally listed species in these alternatives would occur only on National Forest System lands. It is likely that the Indiana bat, bald eagle, and American burying beetle occur on private or other public lands in southeast Ohio. Certain activities that were identified in the Wayne's BA as likely to adversely affect these species may also occur on private lands. Implementation of the Reasonable and Prudent Measures and Terms and Conditions and Conservation Recommendations are not likely to cause adverse cumulative effects to these three species. Alternatives A and C would have no effect on the fanshell, pink mucket pearly mussel, northern wild monkshood, Virginia spiraea, running buffalo clover or small whorled pogonia. Implementation of the Reasonable and Prudent Measures and Terms and Conditions and Conservation Recommendations are not likely to cause adverse cumulative effects to the federally listed species.

Alternative B (No Action) – The Forest Plan as currently written and implemented provides quality habitat for the federally listed species. There is still a chance that specific Forest activities could result in incidental take of the Indiana bat and bald eagle as defined by the Endangered Species Act. By not incorporating the mandatory Reasonable and Prudent Measures and Terms and Conditions from the BO, existing Forest Plan guidance and incidental standards and guidelines would be used to develop and review individual projects. Because no Forest-wide standards and guidelines would be available, biologists and Forest Service personnel will apply the Reasonable and Prudent Measures and Terms and Conditions project-by-project. Much oversight would be needed by WNF

biologists and the U. S. Fish and Wildlife Service to ensure compliance of the BO and its reporting requirements. Consequently, the chance for incidental take would still remain for the Indiana bat and bald eagle. There are also long-term effects of implementing this alternative in terms of the illegality of such an action under the Endangered Species Act, and the negative effects on relationships with partner species conservation agencies and organizations.

Regional Forester Sensitive Species

There are twenty-nine plant and animal species on the Wayne National Forest's Regional Forester Sensitive Species (RFSS) list. Most species are known to occur within the WNF proclamation boundary, however a couple occur just outside the Forest boundary. There is suitable habitat for all twenty-nine species on at least portions of the WNF. Consequently, each has the potential to be affected by the proposed action and alternatives. A biological evaluation was conducted in order to display the direct, indirect, and cumulative effects of the alternatives on the RFSS (USFS 2002a, Appendix B). This information is summarized below and can be viewed in detail in Appendix B.

Summary of Effects

Alternatives A and B had the same effects to the RFSS, even though Alternative B was the no action alternative. For the no action alternative, the Forest Plan would not be amended at this time, but that the Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, it is understood that WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

An analysis of effects determined the direct, indirect and cumulative effects of the alternatives on the RFSS. The results of this analysis are summarized in table below Table 4. The results of the effects analysis show that the alternatives would have either no impact or a beneficial effect on 23 RFSS. Six of the RFSS could be adversely affected by the alternatives, but it was determined that activities in these alternatives may impact individuals but they were not likely to cause a trend to federal listing or loss of viability.

- Indiana bat RPM 6 and TC 8 could adversely affect the black bear. These require protection of known Indiana bat hibernacula. Black bears could potentially use a hibernaculum for denning purposes, and once it is gated with bat-friendly gates as called for in TC 8, bears could not access the mine.

- Indiana bat TC 8 and bald eagle TC 6 may adversely affect the grizzled skipper, Olympia marble, juniper sedge, blue scorpionweed, and yellow fringed orchid. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. All species directly or indirectly respond favorably to fire and the resulting effects to the habitat. The suppression of fire in our oak forests may contribute to the invasion of woody growth in the open oak forest habitats, which renders the habitat unsuitable for the species.

The effects determinations for the RFSS, for each alternative, are displayed in Table 4. Because of the table's size, the following abbreviations were used:

Abbreviation	Definition
IB	Indiana bat
BE	Bald eagle
ABB	American burying beetle
RPM	Reasonable and Prudent Measure
TC	Term and Condition
CR	Conservation Recommendation
1	No impact
2	Beneficial effect
3	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability

The direct, indirect, and cumulative effects for these six species are provided below. Those RFSS that would likely benefit from these alternatives or not be affected at all are included in detail in the biological evaluation (Appendix B).

Black Bear

Under Alternative A, the black bear may be affected from the addition of some Indiana bat RPMs and TCs. Although the black bear is a generalist, it does prefer heavily wooded areas. The Indiana bat RPMs 1-4 and TCs 1-5 address canopy cover and structure of hardwood forest stands; these may have beneficial effects to the black bear since these RPMs and TCs would maintain wooded areas and protect mast producing trees (i.e., hickories). Conversely, Indiana bat RPM 6 and TC 8 could have a minimal short-term impact on black bear individuals. This RPM and TC require protection of known Indiana bat hibernacula, of which there is only one known on the Forest. Black bears could potentially use a hibernaculum for denning purposes, and once it is gated with bat-friendly gates as called for in TC 8, bears could not access the mine. This would equate to a minor inconvenience to the bear since it could realistically find numerous other denning sites nearby. Literally thousands of open mine portals exist on the Wayne. Bald eagle RPMs and TCs should have no impact on the black bear.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the black bear would be similar as those described for Alternative A.

Under Alternative C, the effects to the black bear would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. The black bear may be affected by some CRs. The Indiana bat CRs 4 and 5 may have beneficial effects to the black bear in that upland water holes may be created and undisturbed forested habitat may be maintained around known Indiana bat fall swarming sites. Additionally, American burying beetle (ABB) CRs 1-4 may benefit the bear.

TABLE 4. SUMMARY OF EFFECTS DETERMINATIONS FOR THE REGIONAL FORESTER SENSITIVE SPECIES

	Black bear	River otter	Bobcat	Evening bat	Cerulean warbler	Henslow's sparrow	Timber rattlesnake	Hellbender	Ohio lamprey	W. lake chubsucker	E. sand darter	Salamander mussel	Round hickorynut	Lilliput	Little spectaclecase	Wabash river cruiser	Grizzled skipper	Olympia marble	Juniper sedge	Bicknell's panicgrass	Yellow gentian	Striped gentian	Butternut	Umbrella magnolia	Philadelphia panicgrass	Blue scorpionweed	Yellow fringed orchid	Rock skullcap	Pigeon grape
Alt. A, B & C																													
IB RPM 1	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
IB RPM 2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 3	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 4	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 1	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1
IB TC 2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 3	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. A & B)	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. C)	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 5	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 8	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	3	3	3	1	1	1	1	2	1	3	3	2	1
IB TC 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE 4. SUMMARY OF EFFECTS DETERMINATIONS FOR THE REGIONAL FORESTER SENSITIVE SPECIES

	Black bear	River otter	Bobcat	Evening bat	Cerulean warbler	Henslow's sparrow	Timber rattlesnake	Hellbender	Ohio lamprey	W. lake chubsucker	E. sand darter	Salamander mussel	Round hickorynut	Lilliput	Little spectaclecase	Wabash river cruiser	Grizzled skipper	Olympia marble	Juniper sedge	Bicknell's panicgrass	Yellow gentian	Striped gentian	Butternut	Umbrella magnolia	Philadelphia panicgrass	Blue scorpionweed	Yellow fringed orchid	Rock skullcap	Pigeon grape
Alt. A, B & C																													
BE RPM 1	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 2	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 5	1	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	1	1	1	1	1	1	3	3	1	1
BE TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 9	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1

Under these, the FWS suggests that road maintenance, reconstruction and construction be kept to a minimum within 10 air miles of occupied ABB habitat. Similarly, the FWS suggests that developed recreation sites be planned for and constructed outside occupied ABB habitat. Each of these would reduce bear-human interactions.

Black bear sightings continue to increase. Forest habitat is also on the increase in the WNF and southern Ohio (USFS 1991 as referenced in USFS 2001), thereby increasing the amounts of suitable habitat for the bear. While the majority of non-discretionary and discretionary elements of the BO has either no impact on the bear or its habitat, or may benefit the bear, the gating of known Indiana bat hibernacula remains as the one element of the three alternatives that could adversely affect black bear individuals. Bears that are moving into the Wayne National Forest from Kentucky and West Virginia may use some abandoned, open mine portals for denning, although we have no records of any currently using these mines. The gating of a small number of available den sites would likely only impact a very small number of bears. A recent inventory of abandoned mines on the WNF found hundreds of open portals that could provide suitable denning areas for the bear. Individuals seeking denning areas could easily find other sites nearby. At this time, there are three mine openings gated on the WNF, and there are plans for several more to be gated. The loss of these few mine sites should not pose any cumulative adverse cumulative effects to the species.

Grizzled Skipper and Olympia Marble

In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect these lepidopterans. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. The grizzled skipper is associated with disturbed openings in oak forests. The Olympia marble prefers dry ridge tops in and adjacent to open oak forests. The suppression of fire in our oak forests may contribute to the invasion of woody growth in the open oak forest habitats, which renders the habitat unsuitable for the grizzled skipper and Olympia marble.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the grizzled skipper and Olympia marble would be similar as those described for Alternative A.

Under Alternative C, the effects to the grizzled skipper and Olympia marble would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. CR 6 may benefit the grizzled skipper and Olympia marble. The FWS recommends that the use of pesticides could be restricted within the known range of the ABB on the WNF because of the chemical sensitivity of most insects.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size.

One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that represent grizzled skipper habitat that could be managed with prescribed fire. More importantly, the known grizzled skipper site and Olympia marble site are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. The addition of these Terms and Conditions may impact individuals, but they are not likely to cause a trend to federal listing or loss of viability.

Juniper Sedge

Threats to the local viability of this species include fire suppression and overgrowth by woody vegetation. In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect this species. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. The suppression of fire in our oak forests may contribute to the invasion of woody growth in these openings, which renders the habitat unsuitable for the juniper sedge.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the juniper sedge would be similar as those described for Alternative A.

Under Alternative C, the effects to the juniper sedge would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Another threat to local viability of this species includes soil compaction. ABB CRs 1 and 2 recommend minimal road maintenance, reconstruction, and construction occurs within 10 air miles of occupied ABB habitat. Areas of soil compaction could be reduced by these CRs.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size. One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that represent grizzled skipper habitat that could be managed with prescribed fire. More importantly, the known juniper sedge sites are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. These Terms and Conditions may impact individuals, but they are not likely to cause a

trend to federal listing or loss of viability.

Blue Scorpionweed and Yellow Fringed Orchid
These species reportedly respond favorably to prescribed fire. In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect these species. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the blue scorpionweed and yellow fringed orchid would be similar as those described for Alternative A.

Under Alternative C, the effects to the blue scorpionweed and yellow fringed orchid would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. No CRs would impact this species.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size. One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that possess suitable habitat that could be managed with prescribed fire. More importantly, the known blue scorpionweed and yellow fringed orchid sites are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. These Terms and Conditions may impact individuals, but they are not likely to cause a trend to federal listing or loss of viability.

Management Indicator Species

Direction for Management Indicator Species (MIS) is located in 36 CFR 219.19, which establishes the basis for managing and maintaining viable populations of existing native and desired non-native vertebrate species. Specifically, 36 CFR 219.19(a)(6) states "population trends of the management indicator species will be monitored and relationships to habitat changes determined. Monitoring will be done in cooperation with state fish and wildlife agencies to the extent practicable". An analysis of the effects to MIS was conducted (USFS 2002b, Appendix E).

Project Description

This project is programmatic in nature and when available, utilizes general trends in population changes. The Forest Service and other cooperating agencies and organizations have conducted some inventories of appropriate habitats for these species. Establishing trend data requires long-term monitoring; therefore this data is becoming available for some species but is limited for others.

Wayne National Forest Management Indicator Species

The following list displays the Wayne National Forest Management Indicator Species, along with a brief description of the habitat components the MIS represent. Background information about how these MIS were selected is displayed in Appendix B of the Forest Plan.

MIS Species	Habitat
Cerulean warbler	Close-Canopied, Mature/Over-Mature Hardwoods
Pileated woodpecker	Mature Hardwoods
White-eyed vireo	Late Succession
Common yellowthroat	Middle Succession
Field sparrow	Early Succession
Pine warbler	Conifers
Ruffed grouse	Early Hardwoods
Eastern bluebird	Park Like
Wood duck	Beaver Ponds, Oxbows
Virginia rail	Marsh
Western chorus frog	Fishless Ponds In Fields
Wood frog	Vernal Ponds in Hardwoods
Bluegill	Artificial Impoundments
Southern Redbelly Dace	Small/Intermittent Streams
Redfin Shiner	Medium Streams with Sand/Gravel Pools
Blackside Darter	Medium Streams with Silt Pools
Rainbow Darter	Medium Streams with Riffles
Golden Redhorse	Large Streams with Pools
Sand Shiner	Large Streams with Sand Pools
Banded Darter	Large Streams with Riffles

Summary of Effects

Alternatives A and B had the same effects to the MIS, even though Alternative B was the no action alternative. For the no action alternative, the Forest Plan would not be amended at this time, but that the Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs)

would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, it is understood that WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

An analysis of effects determined the direct, indirect and cumulative effects of the alternatives on the MIS. The results of this analysis are summarized in Table 5. The following abbreviations were used in Table 5 because of the table's size.

Abbreviation	Definition
IB	Indiana bat
BE	Bald eagle
ABB	American burying beetle
RPM	Reasonable and Prudent Measure
TC	Term and Condition
CR	Conservation Recommendation
1	No effect
2	Positive Effect
3	Negative effect

The results of the effects analysis show that the alternatives would have either no impact or a positive effect on 16 of the 20 MIS. Four of the MIS could be adversely affected, to some degree, by the alternatives. These species included the ruffed grouse, white-eyed vireo, yellowthroated chat, and field sparrow. These species represent those animals that require early successional habitat. Early successional habitat can range from herbaceous vegetation found in old pastures to old fields with shrub-scrub components to second growth deciduous woods with dense understories, shrubs, vines, and other tangles. Those Indiana bat Reasonable and Prudent Measures, Terms and Conditions, or Conservation Recommendations that could limit the amount of early successional habitat created on the Wayne National Forest through timber harvesting are shown below.

- Indiana bat RPM 1 requires adequate canopy be retained for Indiana bat foraging.
- Indiana bat RPM 4 directs the Forest Service to maintain a component of large, overmature trees in hardwood stands.
- Indiana bat RPM 6 requires all Indiana bat hibernacula receive protection.
- Indiana bat TC 1 requires at least 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands.
- Indiana bat TC 4 provides guidance on how to maintain a component of large, overmature trees in forest stands by listing specific tree size classes and species that should be retained in hardwood stands.
- Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula.
- Indiana bat CR 5 encourages one-quarter mile of undisturbed forested buffer around known Indiana bat fall swarming sites.

TABLE 5. SUMMARY OF EFFECTS ON MIS FOR THE ELEMENTS OF EACH ALTERNATIVE

	Cerulean warbler	Pine warbler	Pileated warbler	Ruffed grouse	White-eyed vireo	Common yellowthroat	Field sparrow	Eastern bluebird	Wood duck	Virginia rail	Western chorus frog	Wood frog	Bluegill	Redbelly dace	Redfin shiner	Blackside darter	Rainbow darter	Glden redhorse	Sand shiner	Banded darter
Alt. A, B & C																				
IB RPM 1	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 3	2	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 4	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 6	1	1	1	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 1	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 3	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. A & B)	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. C)	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 8	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE RPM 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE TC 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 5	2	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 9	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2

Table 5. Summary of Effects on MIS for the Elements of each Alternative

	Cerulean warbler	Pine warbler	Pileated warbler	Ruffed grouse	White-eyed vireo	Common yellowthroat	Field sparrow	Eastern bluebird	Wood duck	Virginia rail	Western chorus frog	Wood frog	Bluegill	Redbelly dace	Redfin shiner	Blackside darter	Rainbow darter	Glden redhorse	Sand shiner	Banded darter
Alt. C																				
IB CR 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 4	2	1	2	2	2	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
IB CR 5	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
BE CR 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 1	1	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
ABB CR 2	1	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
ABB CR 3	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

The direct, indirect, and cumulative effects for the four MIS that could be adversely affected by the alternatives are provided below. Those MIS that would likely benefit from the alternatives or not be affected at all are included in detail in Appendix E.

Ruffed grouse (*Bonasa umbellus*) – This bird prefers second growth deciduous woods where dense understories, shrubs, vines, and other tangles provide suitable cover. They prefer extensive tracts but may also occupy isolated woodlots. Nests are placed on the ground, usually near woodland edges and clearings. The ruffed grouse occurs in 40 eastern Ohio counties, almost exclusively in southeastern and northeastern Ohio. During the Ohio Breeding Bird Survey approximately 73.5% of breeding bird data blocks detecting the ruffed grouse occurred in the unglaciated plateau (Peterjohn and Rice 1991). Ruffed grouse numbers are cyclic in nature, which seem to be independent of habitat changes and hunting pressures (Peterjohn 1989). In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the National Forest. Twenty-four detections of ruffed grouse were made in 11 of these stands. Detections were made on all three units. The ruffed grouse was also detected during interior forest bird surveys in 7 of the thirty transects. The Ohio Division of Wildlife (ODOW) has been conducting Drumming Count Surveys since 1973. The long-term average of these counts is 20 drumming males heard/100 stops (Dave Swanson, personal communication with Lynda Andrews). Drumming counts for 2002 showed a decrease of 9% from 2001; the index was 48% below the long-term average (ODOW 2002). Other ODOW population monitoring surveys show similar population trend declines. The Squirrel Hunter Grouse Index (number of grouse observed per 1000 hours of squirrel hunting) showed an 83% decrease in grouse flushed compared to 2001. The Grouse Hunter Cooperator results (cooperators who maintain a grouse hunting diary) showed hunters averaged 0.95 flushes per hour in 2001-2002, a figure that was 2% lower than the previous year. The 2001-2002 flushes per hour figure was 17% below the long-term average.

Some of the Indiana bat Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) could have an effect on the ruffed grouse. The RPMs 1, 4, and 6 provide direction to maintain adequate canopy cover for the Indiana bat and protect known hibernacula. Similarly, Indiana bat TC 1 requires that 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands. Indiana bat TC 4 maintains a component of large, overmature trees in forest stands. Grouse require forested habitat, but do need components of early successional woods (brushy) as described above. Group selection cuts (a harvest technique) are allowed by the BO as a tool to create small-sized patches of early successional habitat. Canopy cover requirements would limit the amount of brushy habitat that would be developed through harvests with the RPMs and TCs applied. Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. No early successional habitat would be created in those areas in the future, unless a natural disturbance occurred. At this time, only a single hibernaculum is present on the Forest. No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the ruffed grouse.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the ruffed grouse would be similar as those described for Alternative A.

Under Alternative C, the effects to the ruffed grouse would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat Conservation Recommendation 4 would benefit the grouse. This measure encourages upland waterhole construction to occur for the Indiana bat, which would in turn provide a drinking water source for the grouse. Indiana bat CR 5 would have the same effect on the grouse, as would Indiana bat TC 8, described above. Bald eagle and American burying beetle CRs should have no effect on this species.

As mentioned above, specific Indiana bat Reasonable and Prudent Measures and Terms and Conditions may have cumulative effects on the grouse because the amount of suitable ruffed grouse habitat created on the Wayne using even-age timber harvesting methods will be limited in the foreseeable future. However, early successional habitat will likely be acquired through the lands acquisition program, and the maintenance of early successional habitat would continue through the Wayne's permanent forest openings program. In the 2002-2003 Wildlife Population Status and Hunting Forecast (ODOW 2002), a description of habitat and population change is provided for the ruffed grouse. In summary, the grouse has been a resident species in Ohio since the ice age. Prior to pre-European settlement forest cover and grouse populations covered about 95% of Ohio, but by 1940 only 12% of Ohio was covered by forest. By 1908, the grouse had declined in abundance in eastern Ohio and was absent from western Ohio. Between the 1930's and 1950's, and again in the early 1970's, farms in eastern Ohio were abandoned and these areas converted to brushy habitat and forest cover. Grouse abundance increased because of this. Grouse populations fluctuate and are cyclic in nature, however from 1983 to the present grouse abundance has been consistently low and averaged well below the long-term mean. The ODOW states that this decline is thought to be a result of a decline in quality brushy or early successional habitat. For example, Forest Service inventories show a 50% decline in the seedling/sapling (brush) forest size class from 1968-1991 (ODOW 2002). Hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate grouse habitat, and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including those required by the ruffed grouse. The ODOW (2002) reported that timber growth exceeds harvest in Ohio's grouse range, and that the timber harvesting that does occur has been insufficient to halt the successional trend away from quality grouse habitat and toward more mature forests, something that appears to be occurring on a regional level in neighboring states.

White-eyed vireo (*Vireo griseus*) – This bird represents species that prefer the late-phase of early successional habitats. It inhabits shrubby habitats such as deciduous scrub, old fields, abandoned pastures, regenerating clearcuts or other heavily logged areas, drainage and streamside thickets, forest edges, and reclaimed strip mines. Nests are usually placed six feet high or less in dense bushes. White-eyed vireos were reported in 66.4% of block data during the statewide Breeding Bird Survey and 41.5% of these were in the unglaciated plateau. Trend analysis on state data for the years of 1965 thru 1995 show a rise in the average number of individuals detected per route. More birds per route are detected in the southeastern unglaciated plateau than the rest of the state (Earnst and Andres 1996). In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the Wayne National Forest. Eighty-five

detections of White-eyed vireos were made in 21 of these stands. The majority of detections were made on the Ironton Unit.

Alternative A should have similar effects to this species as displayed for the ruffed grouse. The white-eyed vireo utilizes successional forest habitats with a shrubby component. The Reasonable and Prudent Measures 1, 4, and 6 provide direction to maintain adequate canopy cover for the Indiana bat and protect known hibernacula. Similarly, Indiana bat Term and Condition 1 requires that 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands. This percentage of canopy cover may not open the stands enough to allow the shrub component to fully develop. Indiana bat Term and Condition 4 and 5 maintain a component of large, overmature trees in forest stands. Indiana bat Term and Condition 8 requires one quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. These may have a negative effect on the white-eyed vireo since no early-late successional habitat would be present in those areas in the future. No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the white-eyed vireo.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). This alternative should have the same effects on the white-eyed vireo as that displayed for the ruffed grouse. Indiana bat Conservation Recommendation 5 would encourage the Forest Service to avoid disturbance one-quarter mile from known Indiana bat fall swarming sites. This could limit the amount of successional forest habitat that could be created in these areas. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have cumulative adverse effects on the amount of white-eyed vireo suitable habitat that may be created in the future on the WNF through timber harvesting. The description of forest habitat change displayed for the ruffed grouse shows how early successional (early-late phases) has changed over time in Ohio. Hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, early successional habitat (early-late phases) continues to occur through abandonment of farmlands, including those farms acquired by the Forest Service. It is also maintained through the Forest opening program. It is likely the Forest Service would continue to acquire some old farmlands from willing-sellers in the future, and the Forest opening program would continue in the future. Therefore some white-eyed vireo suitable habitat could be maintained in this manner.

Because of this, only slight adverse cumulative effects are expected for species requiring late-phase early successional habitat.

Common yellowthroat (*Geothlypis trichas*) – This bird represents the middle succession species. It inhabits dense herbaceous vegetation with scattered brushy thickets and small saplings in damp or wet locations. Most breeding pairs inhabit old fields, corridors along fencerows and streams, woodland edges and openings, and the margins of ponds and marshes. Nests are either on the ground under dense herbaceous cover, or at heights of less than one foot attached to shrubs and clumps of grasses. Common yellowthroats are abundant in the state with 99.9% of the Ohio Breeding Bird Survey blocks reporting detection of the species. The unglaciated plateau was the second most abundant region in the state (27.8%) reporting this species (Peterson and Rice 1991). During survey efforts within earlier successional habitat (as described in the white-eyed vireo section) only 5 of 39 sampled areas had common yellowthroats with all but one occurrence being on the Ironton unit. This low number may be due to the limited amount of available aquatic habitat located within them. Earnst and Andres (1996) report the common yellowthroat as being more than twice as common in eastern Ohio than the western part of the state.

Alternative A should not affect this management indicator species, however it could limit the creation of middle-successional habitat for species it represents. The common yellowthroat is a bird associated with open land habitat in damp or wet locations. It uses brushy, shrubby areas common in old fields, forest wildlife openings, and along forest edges. While timber harvesting can create this type of habitat, harvesting of forest stands on the WNF in damp or wet areas follows riparian Forest Plan standards and guidelines, which generally focus on maintaining or enhancing forest cover in these damp areas. Other species, represented by the common yellowthroat, use middle successional habitats not located in damp areas. Therefore Alternative A could have an effect on long-term creation of middle successional habitat through timber harvesting limitations (see effects for ruffed grouse and white-eyed vireo). However, this habitat is also created through an ongoing Forest opening program and through acquisition of abandoned farmlands. No bald eagle Reasonable and Prudent Measures and Terms and Conditions would affect this species.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). This alternative should have the same effects on the common yellowthroat as that displayed for Alternative A. Indiana bat Conservation Recommendation 5 would encourage the Forest Service to avoid disturbance one-quarter mile from known Indiana bat fall swarming sites. This could limit the amount of successional forest habitat that could be created in these areas. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have slight cumulative adverse effects on the amount of mid-successional habitat that may be created in the

future on the WNF through timber harvesting. As stated for the ruffed grouse and the white-eyed vireo, hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, the majority of early successional habitat (middle successional phases) continues to be created and maintained through the Forest openings program and through abandonment of farmlands, including those farms acquired by the Forest Service. Acquisitions of abandoned farmland may occur in the future, and the Forest opening program would continue in the future. Therefore some middle successional habitat could be maintained on the WNF through this avenue. Because of this, only slight adverse cumulative effects are expected for species requiring middle successional habitat.

Field sparrow (*Spizella pusilla*) – This bird occupies a wide variety of brushy successional habitats, such as old fields and cutover hillsides where herbaceous vegetation is interspersed with brushy tangles and scattered small saplings. They inhabit brushy pastures, woodland edges and openings with shrubby undergrowth, and narrow brushy corridors along fencerows, roadsides, railroads, and streams adjacent to open fields. Nests are generally placed 1-3 feet high in shrubs and small saplings. Field sparrows were recorded on 99.5% of the Ohio Breeding Bird Survey blocks reporting detection of the species. Approximately, 80.8% of these detections were listed as confirmed breeding. Every block surveyed in the unglaciated plateau had field sparrows detected (Peterjohn and Rice 1991). Even with the high detection rate Earnst and Andres (1996) state that the field sparrow is on an annual decline of 1.2%. This is thought to be a result from habitat loss due to intensive agricultural practices and to maturation of the eastern Ohio forests. It should also be noted that the severe winters of 1976-77 may have contributed to their decline but numbers were dropping before this event. In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the National Forest. Thirty-four detections of field sparrows were made in 9 of these stands. Detections were made on the Ironton Unit only.

Alternative A could have an effect on long-term creation of early successional habitat through timber harvesting. The field sparrow is a bird that uses a wide variety of brushy successional habitats, such as old fields and cutover hillsides where herbaceous vegetation is interspersed with brushy tangles and scattered small saplings. On the Forest, this habitat is maintained through management of forest wildlife openings, acquired through purchase of abandoned farmland and created through various timber harvesting techniques. The Indiana bat Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) address management and structure of hardwood stands, specifically through RPMs 1, 4, and 6 and TCs 1, 4, and 8. Limits to harvest activities (i.e., canopy cover-TC 1 and 4; lack of harvesting around hibernacula-TC 8) limit the amount of early successional habitat that could be created or where it could be created the future. No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the field sparrow.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this,

the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). Indiana bat Conservation Recommendation 5 would have the same effect on the field sparrow as would Indiana bat Term and Condition 8, described above. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have slight cumulative adverse effects on the amount of early-successional habitat that may be created in the future on the WNF through timber harvesting. As stated for other early-successional species, hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, the majority of early successional habitat continues to be created and maintained through the Forest openings program and through abandonment of farmlands, including those farms acquired by the Forest Service. Acquisitions of abandoned farmland may occur in the future, and the Forest opening program would continue in the future. Therefore some early successional habitat could be maintained on the WNF through this avenue. Because of this, only slight adverse cumulative effects are expected for the field sparrow and species requiring early successional habitat.

Environmental Justice

Executive Order 12898, dated February 11, 1994, requires each federal agency, to the greatest extent practicable and permitted by law, to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The Forest Service is currently operating under Executive Order 12898 and USDA Departmental Regulation 5600-2 to ensure that it conducts its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin.

Other than the high unemployment rate, there are no health, economic, or social problems of significance in the vicinity of the Forest. The proposed action and alternatives do not pose disproportionately high and adverse human health or environmental effects on minority populations or low-income populations in the vicinity of the Forest.

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Appendix A
Public Comments from Initial Scoping

The ID team categorized each response received during the scoping process to identify specific comments, issues, and concerns. Following each comment is a summary of how the comment was addressed in the analysis.

Approximately 160 groups, individuals, and neighbors were contacted regarding the proposed project. The following lists those who responded during the public scoping process. A complete listing of the individuals contacted can be found in the project file.

Table 6. Comments Received During Initial Scoping

Name and Organization	Response
Mitch Farley - ODNR Division of Mines	A
Danny Thompson	B
Marilyn Ortt	C
Adam Bump, Ruffed Grouse Society	D
Mark Donham, Kristi Hanson, Heartwood, Regional Association of Concerned Environmentalists (RACE)	E
Diano Circo, Buckeye Forest Council, Heartwood	F
Jim Bensman, Heartwood	G

Summary of Comments

Comment Letter A
Mainly questions. Questions centered on how the proposed amendment would relate to mining reclamation activities. Specifically, opening that might need to be created to reclaim a mine subsidence, an abandoned mine, or a gob pile.

These comments were addressed in Issue 1--Effect on Resource Management and Production

Comment Letter B
Comments centered on perceived effects of the amendment on oil and gas resources. Comments were about: the size of well pads and the requirement to leave a certain number of trees of certain sizes per acre as proposed in the amendment; allowing for case-by-case variances; and concern that wording is too broad, that it needs to be more definite so forest personnel could not block resources. Commenter suggests that the restrictions for T&E species only apply when a listed species is known to be in the area.

Comment Letter C
Only asked two questions, did not make any comments.

Comment Letter D

Comments centered on concern that the Forest was not producing/developing early successional habitat. Concern expressed about FP Amendment 11 basically eliminating even-aged management on the Forest. Stated concern that the Indiana bat's need for early successional habitat (cited research) are not being met. Stated they'd like to see alternatives developed similar to the ones on the Mark Twain NF's Indiana bat Forest Plan amendment.

These comments were addressed in Issue 1--Effect on Resource Management and Production and Issue 2--Protection and Recovery of Threatened and Endangered Species

Comment Letter E
Comments centered on protecting the Wayne's threatened and endangered species at all costs. Specifically, they expressed concern that allowing logging, including seasonal logging, in T&E species habitat would do nothing to protect the Indiana bat. Stated that pesticide use should be banned anywhere near a listed species. Stated concern about hibernacula not being adequately protected under the proposal. Requested site-specific detail be included in this analysis for all proposed future projects, or that future NEPA analyses be done on site-specific projects that might impact a listed species. Also expressed concern about the forest obtaining an incidental take permit for Indiana bats when no analysis of how low the population can go before it's too late for the species.

These comments were addressed in Issue 2--Protection and Recovery of Threatened and Endangered Species

Comment Letter F
Letter included 9 general comments and 6 specific comments. One general comment was that the Wayne Forest Plan doesn't recognize any T&E species therefore the forest cannot implement any projects that might affect a listed species until the Plan is changed. Another general comment was to not amend the Plan at this point but to include the T&E species in Forest Plan revision. The remaining general comments basically question the adequacy of the BO, stating the BO did not use the best scientific and commercially available data; and stated that the Wayne must do a separate analysis of the bat, its' habitat and the effects of the Forest Plan, not "rubber stamp" the F&WS's analysis. Also stated the Wayne must do an EIS. The specific comments dealt with changing the wording of the Terms and Conditions. Letter included a bibliography listing of information that the letter states the FS must address, but did not include copies of the material or state the relevance of each item. The commenter was contacted for clarification but did not respond.

These comments were addressed in Issue 2--Protection and Recovery of Threatened and Endangered Species

Comment Letter G
Letter basic premise is that the proposed amendment does not provide enough protection for listed species. Letter questions the adequacy of the BO. States that the FS need to consider an alternative that ends all logging on the forest. Includes a page long citation purported as coming from F&WS to the Allegheny NF. Includes a couple of long paragraphs stating "the analysis needs to consider… the analysis needs to consider …; the analysis needs to consider …; etc."

States that the Forest Service must conduct an analysis to determine where the point of no return is for the Indiana bat before any amendment can be approved. Letter also questioned the wording of several of the Terms and Conditions. Letter included a bibliography listing of information that the letter states the FS must address, but did not include copies of the material or state the relevance of each item. The commenter was contacted for clarification and responded with CD containing many of the referenced articles. The response did not discuss the relevance of the articles.

These comments were addressed in Issue 2--Protection and Recovery of Threatened and Endangered Species

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Appendix B
Biological Evaluation

Rebecca R. Ewing, Forest Biologist
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November 21, 2002

Introduction
This Biological Evaluation (BE) is prepared in accordance with direction provided in Forest Service Manual (FSM) 2672.42 and Section 7 of the Endangered Species Act (ESA). The purpose of this document is to determine the effects of the proposed Threatened and Endangered Species Amendment, and its alternatives, on Federally listed threatened and endangered species, and USDA Forest Service Regional Forester Sensitive Species (RFSS), within the Wayne National Forest (WNF). The need for this amendment was precipitated by the issuance of a Biological Opinion (BO) specific to the Indiana bat, bald eagle, and American burying beetle by the U. S. Department of the Interior, Fish and Wildlife Service (FWS) that identified specific actions (Reasonable and Prudent Measures and Terms and Conditions) the Wayne National Forest is required to implement to minimize the level of incidental take of the Indiana bat and bald eagle (USFWS 2001). The amendment would update the Wayne National Forest Land and Resource Management Plan (Forest Plan) to incorporate new management guidance for Federally listed species.

The BE, therefore, will determine whether the proposed action or alternatives are likely to affect Federally listed species or impact Region 9 Regional Forester Sensitive Species that may occur within the analysis area.

The list of Federally Endangered and Threatened species addressed in this BE was identified in cooperation with the U.S. Fish and Wildlife Service (USFWS 2002). The list of Regional Forester Sensitive species was developed after completing risk evaluations during a Regional update (USFS 2000).

Project Description
A detailed account of the project description, purpose, and need for the amendment is found in the Environmental Assessment (EA) for this project. In summary, new information in the form of FWS-issued Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle needs to be incorporated into management direction supplied by the Forest Plan.

A total of three alternatives were developed as a result of issues raised during the scoping process, as required by the National Environmental Policy Act (NEPA).

Alternative A (Proposed Action) – Required Level of Protection
The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions, contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition,

existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.

Alternative B (No Action)
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Alternative C – Enhanced Level of Protection and Plan Consistency
This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate.

Federally Threatened or Endangered Species
According to the U.S. Fish and Wildlife Service (USFWS 2002), the Wayne National Forest comprises part of the range of nine Federally Threatened or Endangered plant and animal species (Table 1B). To date, only the Indiana bat has been documented on the Wayne National Forest. Suitable habitat exists on the Wayne National Forest for all federally listed species in Table 1B.

Table 1B. Federally Endangered and Threatened Species for the Wayne National Forest.

Species	**Common Name**	**Status**
Myotis sodalis	Indiana bat	Endangered
Haliaeetus leucocephalus	Bald eagle	Threatened
Nicrophorus americanus	American burying beetle	Endangered
Cyprogenia stegaria	Fanshell	Endangered
Lampsilis abrupta	Pink mucket pearly mussel	Endangered
Aconitum noveboracense	Northern wild monkshood	Threatened
Isotria medeoloides	Small whorled pogonia	Threatened
Spiraea virginiana	Virginia spirea	Threatened
Trifolium stoloniferum	Running buffalo clover	Endangered

Background Information
During 2000-2001, a programmatic Biological Assessment (BA) was developed to evaluate the effects of continued implementation of the Forest Plan on nine federally listed species present in

or near the WNF (USFS 2001). The BA was presented to the FWS on March 15, 2001, and formal consultation initiated on April 6, 2001.

The FWS reviewed the BA and determined that some activities outlined in the Forest Plan are likely to adversely affect the Indiana bat, bald eagle, and American burying beetle, and that activities in the Forest Plan are not likely to adversely affect the fanshell, pink mucket pearly mussel, northern wild monkshood, running buffalo clover, small whorled pogonia, and Virginia spiraea. Only the Indiana bat, bald eagle and American burying beetle were carried forward into formal consultation because of their likely to adversely affect determination.

Affected Environment
A discussion of the general affected environment for this project can be found in the Environmental Assessment, "Forest Plan Amendment for Threatened and Endangered Species".

Further information about the affected environment can be obtained from the BA (pages 3-1 to 3-5). The BA also contains an in-depth description of the nine federally listed species (i.e., life history, status, range, effects of continued implementation of the Forest Plan, etc.):

Northern wild monkshood	BA pages 5-1 to 5-16
Running buffalo clover	BA pages 5-17 to 5-31
Small whorled pognia	BA pages 5-33 to 5-46
Virginia spiraea	BA pages 5-47 to 5-61
Fanshell	BA pages 6-1 to 6-12
Pink mucket pearly mussel	BA pages 6-13 to 6-23
American burying beetle	BA pages 7-1 to 7-10
Indiana bat	BA pages 7-11 to 7-30
Bald eagle	BA pages 7-31 to 7-43

Analysis of Effects

Indiana Bat (*Myotis sodalis*)

Direct and Indirect Effects
Alternative A
This alternative formally integrates all non-discretionary Reasonable and Prudent Measures and Terms and Conditions of the BO into the Forest Plan. These are designed to minimize the likelihood of incidental take of Indiana bats during implementation of the WNF's Forest Plan.

As discussed in the BO, the integration of the Indiana bat Reasonable and Prudent Measures and Terms and Conditions into the Forest Plan through the amendment process will have the following direct and indirect effects on the Indiana bat and its habitat:

- Impacts of incidental take of Indiana bats will be reduced,
- Indiana bat foraging and roosting habitat will be provided,
- Snags, with the exception of those posing an imminent threat to human safety, will be protected,

- A continuous supply of large roost trees for bats will be maintained; and
- All known Indiana bat hibernacula on the Wayne National Forest will be protected.

The bald eagle Reasonable and Prudent Measures and Terms and Conditions would have no effect on the Indiana bat.

Alternative B (No Action)
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the Indiana bat, are detailed in the programmatic BA (pages 7-17 to 7-28). Effects to the Indiana bat are summarized below.

The WNF is within the species range for the Indiana bat, so the species may be present on any part of the forest during spring, summer and fall. An abandoned mine on the WNF provides a winter hibernaculum for about 150 bats. Indiana bats may currently use unknown hibernacula on other parts of the Forest as well.

Implementation of Forest activities that require the removal of trees may accidentally cause a direct take through the removal of a male roost tree or a maternity colony. Although the potential for this take is extremely small considering the large amounts of available roost trees within and outside of the Forest, the possibility still exists.

Indirect adverse effects may also be caused by the Forest Plan through human disturbance of roosting or hibernating bats and the removal of potential future male roost trees or maternity colony trees. The removal of potential roost trees would in part be offset by the creation of new roost trees through natural processes. Human disturbance in areas of known Indiana bat hibernacula is possible, but would not be expected to cause adverse impacts. Monitoring will be conducted in accordance with the Forest Plan.

Activities conducted on the Forest, which would benefit Indiana bats and their habitat include creation of waterholes and uneven-aged timber harvest. Road ruts, which hold water, are also important drinking water sources for the bat. Standards and guidelines established for the protection of water quality in permanent streams would also benefit the bat by providing ample drinking water. Single-tree harvest, group selection and commercial thinning would create a temporary open forest canopy cover that is beneficial for Indiana bat foraging. A more open canopy also allows additional sunlight to penetrate the Forest creating more potential maternity colony trees with the necessary sun exposure. Standing snags or den trees are located throughout the Forest and are required to remain standing following timber harvest activities.

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it incorporates

discretionary measures, called Conservation Recommendations into the WNF Conservation Plan (Forest Plan Appendix J). These Conservation Recommendations minimize or avoid adverse effects to federally listed species, help implement recovery plans, or help develop information. Implementing the Indiana bat Conservation Recommendations will have the following direct and indirect effects on the Indiana bat:

- Knowledge of the distribution of the Indiana bat on the Wayne National Forest, including roost tree suitability and availability would be enhanced,
- The ability to monitor the status of this species would be increased,
- Technical abilities of WNF biologists would be improved,
- Habitat components for the species would be enhanced, and
- Known Indiana bat fall swarming sites would be protected.

The bald eagle Conservation Recommendations would have no effect on the Indiana bat. Implementation of the American burying beetle Conservation Recommendations would have the following direct and indirect effects on the Indiana bat:

- Potential loss of roost trees through road maintenance, reconstruction, and construction activities would be minimized within 10 air miles of occupied American burying beetle habitat,
- Potential loss of roost trees through development of recreational facilities, within 10 air miles of occupied American burying beetle habitat, could be minimized, and
- Potential food sources (i.e., insects) could be protected with discretionary restrictions of pesticide or herbicide use within the known range of the American burying beetle on the WNF.

This alternative also incorporates new information about preferred Indiana bat trees. Research conducted on the WNF showed that the pignut hickory, red maple, sugar maple, and black oak are used by the Indiana bat. After a discussion with the FWS, these four tree species were added to Indiana bat Term and Condition #4 and would become a Forest-wide Standard and Guideline under this alternative. This new information will assist in maintaining a continuous supply of large roost trees for Indiana bats.

Cumulative Effects

Overall population numbers for the Indiana bat across its range exceed 300,000 individuals (USFS 2001). There are 10 known sites within the species range that contain an excess of 30,000 bats each. The WNF contains one known Indiana bat hibernacula with a population of approximately 150 bats. This population represents 0.05 percent of the overall population of the Indiana bat across its range. The Forest Service has protected this hibernaculum by installing a bat-friendly gate. Hibernacula located on property not in public ownership may be affected by private activities such as residential or commercial development and mineral production. Most of the known and historical hibernacula within the state of Ohio are not on National Forest lands. Activities and development conducted in those areas may affect fall swarming and mating behavior.

Summer habitat for male Indiana bats is found throughout the Forest. Over 95 percent of the WNF is in forest cover and this would remain constant or even increase with the continued implementation of the Forest Plan. The exact acreage of optimal roosting and foraging habitat is unknown, however, activities that would potentially remove habitat are so minimal that it is believed a substantial amount suitable habitat would continue to be present. With continued development in the state of Ohio outside of NFS lands, there is no guarantee that enough habitat throughout its range would be available for stabilization and recovery of the Indiana bat in the future. The WNF would continue to provide quality habitat for the Indiana bat and would coordinate with state and federal agencies to protect and conserve this species.

Most if not all of the Forest is within one kilometer of permanent streams and would therefore be favorable habitat for maternity colonies. Loss of bottomland forest, streamside forest, and upland habitats throughout Ohio may have contributed to the decline of the Indiana bat in the past. However, forest cover in Ohio has increased by 41 percent between 1952 and 1991 (USFS 1991as referenced in USFS 2001). Activities on the WNF would not convert existing riparian forest areas to non-forest uses except in the cases where stream crossings are required for permanent or temporary roads. Timber harvest conducted on private land may remove existing or potential maternity colony trees. These activities are not required to allow standing snags or den trees to remain after harvest, as is done within the Forest.

Water sources would continue to be provided within the WNF. Waterholes, small lakes and ponds would be constructed in accordance with Forest Plan standards and guidelines. Also, the water quality of perennial and intermittent streams would be protected through erosion and runoff control measures. Most water sources outside the Forest are required to follow state and federal water quality standards, which would ensure adequate drinking water supplies for Indiana bat populations in other parts of the state. However, surface water in and around the Forest, affected by acid mine drainage, would reduce the availability of these waters for use by the Indiana bat.

The actions of State and private landowners adjacent to the Forest are an important component of the future cumulative impacts. Residential and commercial development as well as timber harvest and private mineral development may contribute to the direct loss of forest habitat. State and other federal agencies, such as the ODNR and FWS, manage some of these adjacent Forest areas and would work to manage those areas to protect federally listed species and enhance their recovery. Private actions, which are not required to adhere to Forest standards, could result in the loss of roosting and foraging habitat. These impacts could contribute to the cumulative impacts to the species within the state of Ohio.

In summary, Alternatives A and C minimize the impacts of the incidental take on a programmatic scale on the Wayne National Forest. Each incorporates the BO's mandatory Reasonable and Prudent Measures and Terms and Conditions, which provide foraging and roosting habitat, protect hibernacula, and ensure a continuous supply of large roost trees for the bat. Alternative C also incorporates new Indiana bat preferred tree information into the Forest-wide Standards and Guidelines and it incorporates the discretionary Conservation Measures into a WNF Conservation Plan (Forest Plan Appendix J). These measures enhance habitat components, protect known swarming areas, and focus energies on information gathering and

sharing as it relates to the bat and its habitat requirements. However, the measures taken to protect the federally listed species in these alternatives would occur only on National Forest System lands. It is likely that the Indiana bat occurs on private lands in southeast Ohio since the FWS considers its distribution as likely occurring in all Ohio counties (USFWS 2002). Certain activities that were identified in the Wayne's Biological Assessment and Biological Opinion as likely to adversely affect the bat may also occur on private lands.

Alternative B (No Action) – The Forest Plan as currently written and implemented provides quality habitat for the Indiana bat, but there is still a chance that specific Forest activities could result in incidental take as defined by the Endangered Species Act. By not incorporating the mandatory Reasonable and Prudent Measures and Terms and Conditions from the BO, we will be using existing Forest Plan guidance and incidental standards and guidelines as we develop and review individual projects. Because no Forest-wide standards and guidelines would be available, biologists and WNF personnel would interpret BO Terms and Conditions and apply these project-by-project. There is a possibility that these interpretations could vary project-by-project, and may not meet the intent of the FWS. Much oversight would be needed by WNF biologists and the FWS to ensure compliance of the BO and its reporting requirements. Consequently, the chance for incidental take would still remain.

Bald Eagle (*Haliaeetus leucocephalus*)

Direct and Indirect Effects

Alternative A
This alternative formally integrates all non-discretionary Reasonable and Prudent Measures and Terms and Conditions of the BO into the Forest Plan. These are designed to minimize the likelihood of incidental take of bald eagles during implementation of the WNF's Forest Plan. As discussed in the BO, the integration of the bald eagle Reasonable and Prudent Measures and Terms and Conditions into the Forest Plan through the amendment process will have the following direct and indirect effects:

- Bald eagle communal/congregational roosts and concentrations, and nests would be protected,
- Human disturbance where wintering bald eagles roost or congregate would be discouraged,
- Potential impacts of smoke inversion from prescribed fires on roosts, eagle concentration areas or occupied breeding territories would be minimized, and
- Monitoring and understanding of the species and its habitat would be increased.

The Indiana bat Reasonable and Prudent Measures and Terms and Conditions should have no effect on the bald eagle.

Alternative B
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be

completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the bald eagle, are detailed in the programmatic BA (pages 7-35 to 7-42). The effects to the bald eagle are summarized below.

There are no known bald eagle nests within the proclamation boundary of the WNF. Habitat for the eagle is present in parts of the Forest and would increase over time as forest stands mature, so long as sufficient foraging areas remain present (USFWS 2001). Reforestation, land purchases, and creation of lakes, ponds and marshes are each beneficial actions that could encourage bald eagle habitation within the Forest.

Uneven and even-aged timber harvest and any other projects requiring tree removal may inadvertently remove a potential nest tree or night roost tree that has yet to be discovered by Forest Service personnel. Workers conducting timber cutting during the day may not be aware of a tree that is currently being used by eagles, since they would generally only be present at night. Mineral development, timber harvest, road and recreation facility construction, and ORV use would generate noise. Noise may temporarily displace eagles from their roosts or disturb hunting behavior. Continued implementation of Forest-wide guidelines for protection of riparian areas, fish habitat, and water quality would help ensure the availability of suitable roosting habitat and food sources.

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it incorporates discretionary measures, called Conservation Recommendations into the WNF Conservation Plan (Forest Plan Appendix J). These Conservation Recommendations minimize or avoid adverse effects to federally listed species, help implement recovery plans, or help develop information. Implementing the bald eagle Conservation Recommendations will have the following direct and indirect effects on the eagle:

Opportunities for recognition of bald eagle night roosts would be improved.

The Indiana bat and American burying beetle Conservation Recommendations should have no effect on the bald eagle.

In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on the eagle.

Cumulative Effects
The bald eagle has experienced great success with recovery throughout its range in the 48 contiguous states. Continuing threats to the eagle include water quality contamination and habitat loss. Activities conducted in the WNF would not contribute to adverse cumulative impacts on a national scale, since the species is not currently known to nest here. Forest

activities may reduce available potential habitat in the future, however the Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) would minimize these impacts and ensure that suitable eagle habitat is present on the Forest.

In Ohio, one of the continuing threats to the bald eagle is degradation of water quality and loss of suitable riparian habitats. The bald eagle has been known to roost and/or forage along the Ohio River, Burr Oak Reservoir, and Lake Vesuvius. The water quality of these water bodies is dependent upon activities occurring on public and private land. On the WNF, riparian corridors are protected by several established standards and guidelines and the Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) would minimize further protect these resources.

The actions of State and private landowners adjacent to the Forest are an important component of the future cumulative impacts. Residential and commercial development as well as timber harvest and private mineral development may contribute to the direct loss of wetland habitat, nest/roost trees, and increased sediment and pollution loads of the Ohio River watershed where the bald eagle is found. State agencies such as the ODNR manage some of these adjacent Forest areas and would work to manage those areas to protect federally listed species and enhance their recovery. Private actions, which are not required to adhere to Forest standards, would likely result in the loss of eagle habitat. These impacts would contribute to the cumulative impacts to

In summary, Alternatives A and C minimize the impacts of incidental take on a programmatic scale on the Wayne National Forest. Each incorporates the BO's mandatory Reasonable and Prudent Measures and Terms and Conditions, which protects roosts, concentrations and nests; discourages human disturbance in winter roost areas; minimizes potential effects for prescribed fire activities; and increases knowledge of the species and its habitat requirements. Alternative C also incorporates the discretionary Conservation Measures into a WNF Conservation Plan (Forest Plan Appendix J). These measures will improve recognition of night roosts. However, the measures taken to protect the Federally listed species in these alternatives would occur only on National Forest System lands. There is a potential for bald eagles to occur on private lands in parts of southeast Ohio since the FWS considers its distribution as likely occurring in several Ohio counties (USFWS 2002). Certain activities that were identified in the Wayne's biological assessment and biological opinion as likely to adversely affect the bald eagle may also occur and continue to occur on private lands.

Alternative B (No Action) – The Forest Plan as currently written and implemented protects and improves riparian areas potentially used by the bald eagle, but there is still a chance that specific Forest activities could result in incidental take as defined by the Endangered Species Act. By not incorporating the mandatory Reasonable and Prudent Measures and Terms and Conditions from the BO, we will be using existing Forest Plan guidance and incidental standards and guidelines as we develop and review individual projects. Because no Forest-wide standards and guidelines would be available, biologists and WNF personnel would interpret BO Reasonable and Prudent Measures and Terms and Conditions and apply these project-by-project. Much oversight would be needed by WNF biologists and the FWS to ensure compliance of the BO and its reporting requirements. Consequently, the chance for incidental take would still remain.

American Burying Beetle (*Nicrophorus americanus*)

Direct and Indirect Effects

Alternative A
The American burying beetle is recognized as likely occurring only in Athens, Hocking and Vinton counties (USFWS 2002). The beetle was reintroduced in Athens County, and it is assumed that it could expand from the reintroduction site into these three counties (USFS 2001). Although there are no known populations of the beetle within the proclamation boundary of the Wayne, potential habitat may exist within the Forest boundary (USFWS 2001). The FWS determined that no incidental take is anticipated with the continued implementation of the Forest Plan; therefore no Reasonable and Prudent Measures or Terms and Conditions were required for the beetle in the BO. Because of this, no Forest Management Goals or Forest-wide standards and guidelines would be added to the Forest Plan in reference to American burying beetle protection and conservation.

Alternative B (No Action).
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the American burying beetle, are detailed in the programmatic BA (pages 7-4 to 7-7).

The implementation of the Forest Plan would negligibly affect the beetle and will not appreciably reduce the likelihood of survival and recovery of the American burying beetle (USFWS 2001). Site preparation, construction, maintenance and use of areas of occupied habitat for roads, trails and facilities may adversely affect the beetle, if subsoil disturbance occurs or small amounts of habitat are permanently removed from availability.

Alternative C
The American burying beetle is recognized as likely occurring only in Athens, Hocking and Vinton counties (USFWS 2002). The beetle was reintroduced in Athens County, and it is assumed that it could expand from the reintroduction site into these three counties (USFS 2001). The U. S. Fish and Wildlife Service determined that no incidental take is anticipated with the continued implementation of the Forest Plan; therefore no Reasonable and Prudent Measures and Terms and Conditions were required for the beetle in the BO. Because of this, no standards and guidelines would be added to the Forest Plan in reference to American burying beetle protection and conservation. However, this alternative adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, help implement recovery plans, or help develop information.

Implementing the American burying beetle Conservation recommendations will have the following direct and indirect effects on the beetle and/or its habitat

- Ground disturbance during road construction, reconstruction, and maintenance activities within 10 air miles of known beetle habitat would be minimized,
- Construction of improved areas in areas with known beetle populations would be limited,
- Forest ecosystem management activities that benefit the beetle would be encouraged,
- Reintroduction efforts would be monitored, and
- Recommended restrictions on pesticide use, within the known range of the beetle on the WNF, would be considered.

Indiana bat and bald eagle Conservation Recommendations would have no effect on the American burying beetle.

In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on the beetle.

Cumulative Effects
Current threats to the species, within its range, are primarily habitat fragmentation and lack of available carrion. General urban/suburban expansion, plus activities such as strip mining could have adverse effects on the species. Reintroduction of the American burying beetle would likely continue at the Waterloo Wildlife Research Station, as would monitoring for success of reintroduction efforts. Reintroduction of the species on National Forest System lands may occur in the future. Continued development outside of National Forest lands may continue to contribute to habitat fragmentation in the future.

No Reasonable and Prudent Measures and Terms and Conditions were required for protection of the American burying beetle in the Biological Opinion. The U. S. Fish and Wildlife Service recognized that the implementation of the Forest Plan will negligibly affect the species and will not appreciably reduce the likelihood of survival and recovery of the American burying beetle (USFWS 2001). Site preparation, construction, maintenance and use of areas with occupied habitat for roads, trails and facilities may adversely affect the beetle, if subsoil disturbance occurs or small amounts of habitat are permanently removed from availability. Alternative C incorporates the discretionary Conservation Measures into a WNF Conservation Plan (Forest Plan Appendix J). These measures would improve protection of occupied beetle habitat and would increase our understanding of the species and its distribution in southeast Ohio. However, the measures taken to protect the beetle in Alternative C would occur only on National Forest System lands. There is a potential for the beetle to occur on private lands in parts of Athens, Hocking, and Vinton counties (USFWS 2002). Certain activities that were identified in the WNF BA as likely to adversely affect the beetle may also occur on private lands. Management activities conducted on the WNF are not expected to contribute to adverse cumulative impacts on the American burying beetle.

Fanshell (Cyprogenia stegaria) and Pink Mucket Pearly Mussel (*Lampsilis abrupta*)

Direct and Indirect Effects

Alternative A
These two mussels are known from the Ohio River and the Muskingum River (USFWS 2002). There is no potential habitat within the Wayne National Forest for either of these aquatic species (USFS 2001). The host fish for these two species may utilize some of the Ohio River tributaries that drain the Forest. Alternative A would add the non-discretionary Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle, from the BO, to the Forest Plan. Under Alternative A, The Indiana bat RPMs and TCs should have no impact on these mussel species or their host fish. However, some bald eagle RPMs and TCs could affect their host fish. Bald eagle RPM 1, TC 2 and 5 address the protection of bald eagle roosting habitat. Since the bald eagle most often roosts along water bodies, the protection of riparian trees can have beneficial effects to the host fish, which would indirectly benefit the mussels. Riparian trees provide shade and organic nutrients to the aquatic system, affecting the water temperature and the food base.

Alternative B
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the fanshell and pink mucket pearly mussel, are detailed in the programmatic BA (pages 6-4 to 6-12 and 6-15 and 6-23). Effects of incorporating, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis are the same as described for Alternative A.

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, that help implement recovery plans, or that develop information. In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on the two mussels or their host fish. The Reasonable and Prudent Measures and Terms and Conditions and Conservation Recommendations would have no direct or indirect effect on host fishes or their habitat. Therefore, Alternative C would have no effect on the fanshell or pink mucket pearly mussel.

Cumulative Effects
Continuing threats to the pink mucket and fanshell include creation of impoundments, decreased water quality, invasion of exotic mussel species and incidental take during commercial mussel harvest. The entire area of the Forest is within the Ohio River watershed, which is known to

contain the two species. None of the Reasonable and Prudent Measures, Terms and Conditions, or Conservation Measures would contribute to degradation of water quality. The actions of State and private landowners adjacent to the Forest are an important component of future cumulative impacts. Most private lands within the Forest boundary are used for rural activities, such as cropland, pasture, rural structures, and recreation. Nearly all of these lands are in woodland cover or other rural use, cultivated, pastured, or residential. Other activities that occur on non-federal lands within the Forest boundary include private oil and gas development, surface mining of coal, clay, and limestone, construction of buildings and other structures, road construction and maintenance, and timber harvest. Oil and gas development and timber sales occur more often on private lands than on federal lands. These activities and development may contribute to the sediment and pollution loads of rivers where the mussels are found. State agencies such as the ODNR manage some of these adjacent Forest areas and would work to manage those areas to protect federally listed species and enhance their recovery. Cumulatively, the addition of Reasonable and Prudent Measures and Terms and Conditions, and Conservation Recommendations in the case of Alternative C, would have no adverse effect on the two species. No cumulative effects are expected to occur to these species with the implementation of any alternative.

Northern Wild Monkshood (*Aconitum noveboracense*)

Direct and Indirect Effects

Alternative A

Northern wild monkshood is a perennial herb in the buttercup family (Ranunculacea) that flowers from late June through September. This species generally grows in humid environments that are exposed to either continuous cold air drainage from subterranean vents or cold groundwater flow from neighboring bedrock. Cliff faces, talus slopes, and headwaters of streams provide such habitat. Northern wild monkshood is restricted to 20 extant sites in three regions of the United States. In Ohio, all known populations are located in the area where shale and conglomerate sandstone of Mississippian and Pennsylvanian age contact. In the vicinity of the WNF, this contact zone occurs in the western half of Hocking County, the extreme northern portion of Perry County, the extreme western portion of Vinton County, the extreme western portion of Jackson County, and in eastern Scioto County. This contact zone lies very near to, but outside of, the boundary of the Wayne NF. The Hocking County population, located in privately owned and managed Crane Hollow State Nature Preserve, was found to be reasonably stable over the past decade (USFWS 1995 as referenced in USFWS 2001). No Forest-wide surveys for northern monkshood have been completed. Surveys are on a project-by-project basis, where no individuals have been found to date on WNF land.

Alternative A would add the Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle, from the BO, as Standards and Guidelines in the Forest Plan. Protection of areas around known hibernacula, which are rocky in nature, would provide protection to suitable habitat for this species. Otherwise, this alternative would have no effect on the species or any suitable habitat.

Alternative B

The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the northern wild monkshood, are detailed in the programmatic BA (pages 5-5 to 5-16). Effects of incorporating, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis are the same as described for Alternative A. The FWS concurred with the Forest Service that the continued implementation of the Forest Plan (i.e., Alternative B) would not adversely affect this species (USFWS 2001).

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, help implement recovery plans, or develop information. Protection of areas around known hibernacula, which are rocky in nature, would provide protection to suitable habitat for this species. Otherwise, this addition of the Conservation Recommendations would have no effect on the species or any suitable habitat. In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on this species.

Cumulative Effects
Threats to this species throughout its range, including dams and reservoirs, road construction and maintenance, power line construction and maintenance, logging and quarry operations, grazing, developments, scientific over collection and over visitation, and natural catastrophes. There are currently no known populations of the northern wild monkshood on WNF lands. The closest known population to the Forest is located in Hocking County, which contains lands within the Athens Unit of the Forest. The WNF is intermixed and surrounded by private and state owned lands. Activities that occur on these lands have the potential to affect the northern wild monkshood and its habitat. Most private lands within the Forest boundary are used for rural activities, such as cropland, pasture, rural structures, and recreation. Cumulatively, the addition of Reasonable and Prudent Measures and Terms and Conditions, and Conservation Recommendations in the case of Alternative C, would have no effect on the species. No cumulative effects are expected to occur to this species with the implementation of any alternative.

Running Buffalo Clover (*Trifolium stoloniferum*)

Direct and Indirect Effects
Alternative A
Running buffalo clover is a stoloniferous perennial herb in the Pea family (Fabaceae) that flowers from April to June. While this species reproduces by seed, new plants can also form from the stolons, which root at the nodes. Running buffalo clover can be found in a wide variety

of habitats, but prefers semi-shaded, edge regions that have been subjected to some sort of moderate, periodic disturbance over an extended period of time (e.g. light grazing or old trails). However, it will generally not tolerate full-shade or full-sun habitats, or severe disturbance. Ohio populations are centered around the limestone-underlain region near Cincinnati and Lawrence County, where almost all of the known Ohio populations are near streams and rivers (NatureServe Explorer; USFS 2001).

A survey for running buffalo clover was completed on approximately 320 acres of Wayne NF land on the Ironton Ranger District during May of 1996. Survey efforts were focused primarily along streams, trails, and old roads. No individuals were found. Alternative A would add the Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle, from the BO, as Forest Management Goals and Forest-wide Standards and Guidelines, respectively, in the Forest Plan. The actions would have no effect on the species or any suitable habitat.

Alternative B
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the northern wild monkshood, are detailed in the programmatic BA (pages 5-20 to 5-31). Effects of incorporating, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis are the same as described for Alternative A. The FWS concurred with the Forest Service that the continued implementation of the Forest Plan (i.e., Alternative B) would not adversely affect this species (USFWS 2001).

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, help implement recovery plans, or develop information. The addition of the discretionary Conservation Recommendations to the WNF Conservation Plan should have no effect on the species or any suitable habitat. In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on this species.

Cumulative Effects
Threats to this species throughout its range, including habitat destruction (from road construction, ATV use, etc.), canopy closure, over-grazing, competition from non-native invasive plant species, and a reduction of hoofed mammals that once contributed to habitat disturbance and plant dispersal. There are currently no known populations of the running buffalo clover on WNF lands. The closest known population to the Forest is located in Lawrence County, approximately eight miles from the southern border of the Ironton Ranger District.

The WNF is intermixed and surrounded by private and state owned lands. Activities that occur on these lands have the potential to affect the running buffalo clover and its habitat. Most private lands within the Forest boundary are used for rural activities, such as cropland, pasture, rural structures, and recreation. The U. S. Fish and Wildlife Service concurred that the continued implementation of the Wayne National Forest Plan is not likely to adversely affect the running buffalo clover. Cumulatively, the addition of Reasonable and Prudent Measures and Terms and Conditions, and Conservation Recommendations in the case of Alternative C, would have no effect on the species. No cumulative effects are expected to occur to this species with the implementation of any alternative.

Virginia spiraea (*Spiraea virginiana*)

Direct and Indirect effects

Alternative A

Virginia spirea is a perennial flowering shrub (up to 1 meter in height) in the rose family (Rosaceae) that flowers in June and July. This species is generally found in open riverine and riparian habitats along rocky banks or low sandbars, and thrives in geologically active areas that are subject to erosion, deposition and scouring. However, optimal spirea sites are not areas of maximum erosion, but rather where deposition occurs after flooding or high water events (e.g., overwash islands and floodplains). In Ohio, four populations exist along Scioto Brush Creek in Scioto County, which has acid soil along its banks as a result of acid mine drainage. In 1991, the southeastern portion of Ohio, including portions of all three units of the Wayne NF, was surveyed for Virginia spirea (Stine 1993). No individuals were found on National Forest System lands. No Forest-wide surveys for this species have been completed. Surveys are on a project-by-project basis, where no individual have been found to date on WNF land.

Alternative A would add the Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle, from the BO, as Forest Management Goals and Standards and Guidelines in the Forest Plan. This alternative should have no effect on the species or any suitable habitat.

Alternative B

The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the northern wild monkshood, are detailed in the programmatic BA (pages 5-51 to 5-61). Effects of incorporating, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis are the same as described for Alternative A. The FWS concurred with the Forest Service that the continued implementation of the Forest Plan (i.e., Alternative B) would not adversely affect this species (USFWS 2001).

Alternative C

This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, help implement recovery plans, or develop information. The addition of the discretionary Conservation Recommendations to the WNF Conservation Plan should have no effect on the species or any suitable habitat. In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on this species.

Cumulative Effects

Perhaps the greatest threat to Virginia spirea populations is habitat loss due to alteration of riverine habitats through channelization and stream projects (e.g., dams and impoundments), and gravel mining operations. Other identified threats include insect damage and competition from non-native invasive plant species (USFWS 1992b).

There are currently no known populations of the Virginia spiraea on WNF lands. The closest known populations to the Forest are located in Scioto County, which contains lands within the Ironton Ranger District. The WNF is intermixed and surrounded by private and state owned lands. Activities that occur on these lands have the potential to affect the Virginia spiraea and its habitat. Most private lands within the Wayne NF boundary are used for rural activities, such as cropland, pasture, rural structures, and recreation. The FWS concurred that the continued implementation of the WNF is not likely to adversely affect the Virginia spiraea. Cumulatively, the addition of Reasonable and Prudent Measures and Terms and Conditions, and Conservation Recommendations in the case of Alternative C, would have no effect on the species. No cumulative effects are expected to occur to this species with the implementation of any alternative.

Small whorled pogonia (*Isotria medeoloides*)

Direct and Indirect Effects

Alternative A

Small whorled pogonia is an herbaceous perennial in the orchid family (Orchidaceae) that flowers from mid-May to mid-June. The flowers are apparently self-pollinating, though vegetative reproduction may occur occasionally. This species generally grows on moderate slopes (0-30 percent) in mid-successional forests with a sparse understory and herb layer, where soil tends to be highly acidic and nutrient poor. Proximity to physical features, like streams, which tend to create long semi-permanent breaks in the forest canopy, encourages the growth of this pogonia. Furthermore, evidence of human disturbance (e.g. selective cutting; old homesteads) is generally present at most known small whorled pogonia sites. This rare orchid is only known from three locations in Ohio, one in Shawnee State Forest in Scioto County, and two in Hocking County. Approximately 260 acres of forest on the Ironton District (Scioto County) were surveyed for this orchid in June/July of 1997. No individuals were found. Surveys continue on a project-by-project basis, where no individual have been found to date on WNF land. Alternative A would add the Reasonable and Prudent Measures and Terms and Conditions

for the Indiana bat and bald eagle, from the BO, as Standards and Guidelines in the Forest Plan. This alternative should have no effect on the species or any suitable habitat.

Alternative B
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Short and long term effects, as well as direct and indirect effects of implementation of the Forest Plan, as they relate to the northern wild monkshood, are detailed in the programmatic BA (pages 5-37 to 5-46). Effects of incorporating, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis are the same as described for Alternative A. The FWS concurred with the Forest Service that the continued implementation of the Forest Plan (i.e., Alternative B) would not adversely affect this species (USFWS 2001).

Alternative C
This alternative not only adds the non-discretionary Reasonable and Prudent Measures and Terms and Conditions to the Forest Plan (as described under Alternative A), it adds measures, called Conservation Recommendations (discretionary agency activities) that minimize or avoid adverse effects to federally listed species, that help implement recovery plans, or that develop information. The addition of the discretionary Conservation Recommendations to the WNF Conservation Plan should have no effect on the species or any suitable habitat. In addition, this alternative incorporates new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline). This would have no effect on this species.

Cumulative Effects
Habitat destruction and over collection have been identified as the two main threats to the continued existence of small whorled pogonia, where maturation of habitat through succession, and removal of canopy by logging has also been identified as potential hazards. There are currently no known populations of the small whorled pogonia on WNF lands. The closest known populations to the Forest are located in Scioto County, which contains lands within the Ironton Ranger District, and Hocking County, which contains lands within the Athens Unit. The WNF is intermixed and surrounded by private and state owned lands. Activities that occur on these lands have the potential to affect the small whorled pogonia and its habitat now and in the future. Most private lands within the WNF boundary are used for rural activities, such as cropland, pasture, rural structures, and recreation. The U. S. Fish and Wildlife Service concurred that the continued implementation of the Wayne National Forest Plan is not likely to adversely affect the small whorled pogonia. Cumulatively, the addition of Reasonable and Prudent Measures and Terms and Conditions, and Conservation Recommendations in the case of Alternative C, would have no effect on the species. No cumulative effects are expected to occur to this species with the implementation of any alternative.

Regional Forester Sensitive Species

There are twenty-nine plant and animal species on the Wayne National Forest's Regional Forester Sensitive Species (RFSS) list. 2B displays the species, summarizes their habitat requirements, and provides general information about their historic or present occurrences on the Forest. Most species are known to occur within the WNF proclamation boundary, however a couple occur just outside the Forest boundary. There is suitable habitat for all twenty-nine species on at least portions of the WNF. Consequently, each has the potential to be affected by the proposed action and alternatives.

Summary of Effects

Alternatives A and B had the same effects to the RFSS, even though Alternative B was the no action alternative. For the no action alternative, the Forest Plan would not be amended at this time, but that the Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, it is understood that WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

An analysis of effects determined the direct, indirect and cumulative effects of the alternatives on the RFSS. The results of this analysis are summarized in Table 3B (near the end of this document). The results of the effects analysis show that the alternatives would have either no impact or a beneficial effect on 23 RFSS. Six of the RFSS could be adversely affected by the alternatives, but it was determined that activities in these alternatives may impact individuals but they were not likely to cause a trend to federal listing or loss of viability.

Indiana bat RPM 6 and TC 8 could adversely affect the black bear. These require protection of known Indiana bat hibernacula. Black bears could potentially use a hibernaculum for denning purposes, and once it is gated with bat-friendly gates as called for in TC 8, bears could not access the mine.

Indiana bat TC 8 and bald eagle TC 6 may adversely affect the grizzled skipper, Olympia marble, juniper sedge, blue scorpionweed, and yellow fringed orchid. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. All species directly or indirectly respond favorably to fire and the resulting effects to the habitat. The suppression of fire in our oak forests may contribute to the invasion of woody growth in the open oak forest habitats, which renders the habitat unsuitable for the species.

An in-depth analysis of the direct, indirect, and cumulative effects is contained in the next section of this biological evaluation.

Table 2B: Regional Forester Sensitive Species list for the Wayne National Forest.

Species	Habitat Requirements	Occurrences (present or historic)
MAMMALS		
Black Bear *Ursus americanus*	Black bear prefer heavily wooded areas with a dense understory, but they will also utilize forests with open areas, like meadows. This includes the hardwood forests of eastern North America. Black bear have been sporadically found on the WNF, and problem bears have been relocated onto national forest lands. A black bear's home range and foraging pattern require several smaller food source areas that are connected by travel corridors. Stream and creek banks are often used as travel lanes because of thick undergrowth and a barrier-free escape route. Although black bears prefer thick cover, they often consume berries, flowers, grasses and sedges, herbs, tubers and roots, and nuts of all kind, many of which are found growing in open meadow situations.	Known to occur on all three units of the Wayne National Forest.
River Otter *Lutra canadensis*	River otters live in streams, rivers, ponds, marshes, and wetlands. They prefer long, slow-flowing, meandering waterways. They have a low tolerance for chemical pollutants and will not be found in areas of poor water quality (DOW 2002a). Good otter habitat contains year-round open water, densely wooded riparian cover along the banks, and abundant fish, their favorite prey. Other major prey items include aquatic insects, crayfish, snakes, and frogs. Fallen trees, log jams, and other stream structures are important as resting and feeding habitat. The presence of beaver may also benefit otters. Beaver dams slow down water currents and allow sediments to settle. This makes it easier for otters to find and catch their prey. Otters also sometimes use abandoned beaver lodges for their dens.	The river otter was reintroduced to the Little Muskingum River watershed (Marietta Unit). It has been documented in the Symmes Creek watershed (Ironton Ranger District).
Bobcat *Lynx rufus*	The bobcat is found in a variety of habitats and cover types. In the east, these include swamps, forests, and brushy areas. Their diet consists mainly of hares, rabbits, birds, and small mammals, and they also scavenge on carrion.	Documented within the Ironton Ranger District purchase boundary (last 25 years) and in Athens and Hocking counties, near the Athens Unit, in the early-1960s.
Evening Bat *Nycticeius humeralis*	Little is known about the evening bat in Ohio, but it is believed to be rare (Belwood 1998). Ohio is probably near the northern edge of this species' range. This bat forms maternity colonies in attics, tree cavities, and under loose bark on trees. They are thought to migrate to warmer climates in winter. Evening bats emerge early in the evening to feed on flying insects among trees. In Illinois and Indiana, they have been found foraging along the edges of mature woods and within clearings in those woods (Belwood 1998).	The evening bat is known on the Ironton Ranger District from only one record, 22 years ago, along Black Fork Creek.

BIRDS		
Cerulean Warbler *Dendroica cerulea*	Eastern Ohio is in the core area of the species' breeding range. The cerulean warbler prefers large tracts of mature deciduous woods. In southeast Ohio, it is found in mixed mesophytic upland and floodplain forests. Nests are located in the canopy of tall trees (Peterjohn and Rice 1991). They are known to occur throughout all units on the Wayne National Forest and are relatively common.	This species is known from all three units of the Wayne National Forest.
Henslow's Sparrow *Ammodramus henslowii*	This species utilizes grassland habitat for breeding. It has been found on reclaimed strip-mine areas in the Wayne National Forest, and the nearby Crown City Wildlife Area. These occupied sites are extensive grass areas that have not reverted to forest.	The Henslow's sparrow has been observed on reclaimed strip-mine lands on the Athens and Ironton units.
REPTILES		
Timber Rattlesnake *Crotalus horridus*	The species is currently found in widely scattered areas of southern unglaciated Ohio. Limited numbers occur in Adams, Athens, Hocking, Jackson, Pike, Ross, Scioto, and Vinton counties (Caldwell 2002). It has been confirmed in Lawrence County (Kathy Flegel, pers. comm.) Timber rattlesnakes prefer dry, wooded hill country. Summer habitat is described as "mixed deciduous or coniferous forests with nearly closed canopy, heavy leaf litter and little herbaceous cover, and a few rocks or fallen trees" (DOW 2002b). Den sites are usually found in rock outcroppings and on talus, south-facing slopes with relatively open canopy cover. It is thought that human persecution combined with habitat destruction and a low reproductive rate account for the declining population (Caldwell 2002).	Known to occur on the Athens Unit and the Ironton Ranger District.
AMPHIBIANS		
Eastern Hellbender *Cryptobranchus alleganiensis*	Hellbenders are aquatic organisms throughout their life and remain active year-round. These salamanders generally spend the daylight hours in a natural or self-excavated den beneath large slabs of rock or other shelter-providing objects (logs and boards) on the bottom of streams or rivers. Hellbenders become active after dark, leaving shelter to forage, feeding primarily on crayfish, fish, frogs and a variety of invertebrates. Courtship and breeding begin in late summer. Sexually mature salamanders migrate to and congregate within certain areas to breed. Hellbenders are more conspicuous at this time of the year and some diurnal activity may be observed on overcast days. Males excavate a large nest chamber beneath a rock in preparation for breeding. Gravid females are either attracted to or corralled into the nest sites by the males. Egg lying is initiated about the first week in September. Very little is known about larval habits and survivorship, as very few are encountered in the field. It is likely that they either suffer high mortality (falling prey to fish and other predators) during the first years of life, or that they are utilizing some part of the aquatic habitat that makes them difficult to locate and document. Within the Wayne National Forest, suitable habitat exists in the mainstem of the Little Muskingum River. A single individual was collected in 1988, however none were found during a survey in 1999 and 2000 (Pfingsten 2001). Pfingsten (2001) is convinced that the hellbender exists in the Little Muskingum, but surveys in their habitats are difficult.	Known to occur in the Little Muskingum River, on the Marietta Unit of the Athens Ranger District.

FISHES		
Ohio Lamprey *Ichthyomyzon bdellium*	The Ohio lamprey moves from the Ohio River into tributaries to spawn when water temperatures reach 50°F or more. The newly transformed sub-adults descend into the lower courses of the larger rivers or into the Ohio River, where there is a sufficient population of fishes upon which to prey (Trautman 1981). Within the Wayne National Forest, the Ohio lamprey is known only from the mainstem of the Little Muskingum River. Its spawning habitat consists of the large extensive riffles common in the middle reaches of the system (Rice and Michael 2001). Suitable habitat does not exist in other streams in the Forest.	Known to occur in the Little Muskingum River, on the Marietta Unit of the Athens Ranger District.
Western Lake Chubsucker *Erimyzon sucetta*	This species range includes from the pothole lakes and glaciated streams of Ohio, however Trautman (1981) reported there were questionable records of it along the Ohio River. It is now found in the upper Symmes Creek drainage within the Wayne National Forest (Holeski 1992; 1993). It is intolerant of turbidity and siltation, and usually occurs most often in areas with much submerged vegetation and where the bottoms are of sand or fine gravel.	Known to occur in the Symmes Creek watershed, on the Ironton Ranger District
Eastern Sand Darter *Ammocrypta pellucida*	The eastern sand darter inhabits sandy areas of streams of moderate- to larger-sized streams. The darter buries itself into the sand, with only its eyes exposed. It will wait for passing prey and will dash out to capture it, after which it reburies itself (Trautman 1981). Within the Wayne National Forest, two stream systems possess suitable habitat for the species: the mainstem of Symmes Creek and Little Muskingum River. Individuals have been captured from each of these systems.	Known to occur in the Symmes Creek watershed on the Ironton Ranger District and in the Little Muskingum River in the Marietta Unit of the Athens Ranger District.
MUSSELS		
Salamander Mussel *Simpsonaias ambigua*	Suitable habitat for this species includes medium to large rivers on mud or gravel bars and under flat slabs or stones (Cummings and Mayer 1992). For the Wayne National Forest, suitable habitat exists in the mainstem of the Little Muskingum River. Although all watersheds with suitable habitat have been surveyed for the salamander mussel, the species has only been documented from the mainstem of the Little Muskingum River during a 1999-2000 survey (Hoggarth 2001).	Known to occur in the Little Muskingum River, on the Marietta Unit of the Athens Ranger District.
Round Hickorynut *Obovaria subrotunda*	Suitable habitat for this species includes medium-sized streams in sand and gravel in areas with moderate flow (Cummings and Mayer 1992). Surveys have documented this species in the lower reaches of Pine Creek, the middle reaches of Symmes Creek, and the lower half of the Little Muskingum River (Watters 1988; Hoggarth 2001).	Known to occur in the Pine Creek and Symmes Creek watersheds on the Ironton Ranger District and in the Little Muskingum River watershed in the Marietta Unit of the Athens Ranger District.
Lilliput *Toxolasma parvus*	Suitable habitat for this species includes ponds, lakes, and creeks to large rivers in mud, sand, or fine gravel (Cummings and Mayer 1992). Although all watersheds with suitable habitat have been surveyed for the Lilliput, the species has only been collected in the Black Fork drainage in the Symmes Creek watershed (Watters 1988).	Known to occur in the Symmes Creek watershed, on the Ironton Ranger District

Little Spectaclecase Mussel *Villosa lienosa*	This mussel is characteristically associated with the old Teays River drainage, and Ohio is considered the northern-most extent of its range (Watters 1988). It inhabits small to medium streams in sand or gravel (Cummings and Mayer 1992). Although all watersheds with suitable habitat have been surveyed for the little spectaclecase mussel, the species has been collected only in the Pine Creek and Symmes Creek drainages.	Known to occur in the Symmes Creek watershed, on the Ironton Ranger District
INSECTS		
Wabash River Cruiser *Macromia wabashensis*	The Wabash river cruiser, a federal species of concern, is a dragonfly that uses streams with patches of water willows (*Justicia americana*). The adults will also fly over streams or be on woodland trails or old logging roads. Currently, the only record of this species found near the WNF was on a dammed stream reservoir at Burr Oak State Park in Morgan County (near the Athens unit) in August 1982 (Heady 1994).	Documented at Burr Oak Reservoir, just outside the Wayne National Forest proclamation boundary.
Grizzled Skipper *Pyrgus Wyandot*	The southern grizzled skipper, a federal and state species of concern/special interest, is a butterfly associated with disturbed openings in mature oak forests, which includes open hillsides, disturbed ridgetops, power line cuts and roadsides (Iftner et al. 1992). The host plants for this butterfly (dwarf cinquefoil, *Potentilla canadensis*; coltsfoot, *Tussilago farfara*; wood vetch, *Vicia caroliniana*; and spring beauty, *Claytonia virginica*) all require open canopy and full sunlight (Gleason and Cronquist 1991). The suppression of fire in our forests has led to the invasion of woody growth in the openings that renders the habitat unsuitable.	Known to occur on the Athens Unit of the Athens Ranger District
Olympia Marble *Euchloe olympia*	The Olympia marble is a butterfly species about which little is known. It is thought to occur on dry ridgetops in and adjacent to open oak forests. Rockcresses (*Arabis* spp.) are believed to be the primary food plant.	Known to occur on the Ironton Ranger District
PLANTS		
Juniper Sedge *Carex juniperorum*	This plant grows on thin, clayey soils derived from limestone and crumbling dolomite bedrock in open woodlands surrounding natural glades or prairie openings, and is often associated with red cedar. Populations in Ohio have responded favorably to prescribed burning, and appear to thrive in open canopy conditions characterized by high sunlight exposure and warm temperatures. Threats to local viability include fire suppression, overgrowth by woody vegetation, and soil compaction.	Known to occur on the Ironton Ranger District
Bicknell's panicgrass *Dicanthelium bicknellii*	It occupies dry woods, thickets, and openings. It has been found in Gallia, Lawrence, and Jackson Counties. Threats to the species may include grazing and over shading by woody species as a result of succession.	Known to occur on the Ironton Ranger District
Yellow Gentian *Gentiana alba*	This species grows in mesic prairies, savannas, grassy meadows and damp woods. Known populations on the WNF occur on the Athens Ranger District in Athens County in a woodland, prairie remnant community, and on a nearby roadside. Threats to the species are unknown, but may include overgrowth by woody species through succession.	Known populations on the Wayne NF occur on the Athens Ranger District in Athens County in a woodland, prairie remnant community, and on a nearby roadside.

Striped Gentian GENTIANA VILLOSA	Grows in open woods and pinelands. It is historically known from Jackson, Gallia, and Scioto Counties. Threats to the species are unknown, but may include overgrowth by woody species through succession.	Known historically from Jackson, Gallia, and Scioto Counties
Butternut *Juglans cinerea*	This is a deciduous forest tree in the walnut fami ly. Typical habitat for butternut is mesic ravine slopes of mixed hardwood stands, creek bottoms, and riverbanks. Threats to butternut are its susceptibility to a canker-causing fungus, harvest of remaining healthy trees for woodworking, and overcrowding and over shading.	Known to occur on all three units of the Wayne National Forest.
Umbrella Magnolia *Magnolia tripetala*	Typical habitat for this species is mesic shaded ravines and coves in the Appalachian Highlands. In Ohio it occurs in four counties along the more rugged western border of the unglaciated Allegheny plateau, conforming to preglacial Teays River drainage lines and its major tributaries. Threats to the species include opening the canopy through logging.	Known to occur on the Ironton Ranger District and within the Athens Unit purchase boundary.
Philadelphia *Panicgrass panicum philadelphicum*	Preferred habitat in Ohio is open ground, waste places and cultivated soil, but in west Virginia it also inhabits dry woods, clearings and sandy shores. Threats are unknown, but may include grazing.	Known to occur on the Ironton Ranger District
Blue Scorpionweed *Phacelia ranunculacea*	Habitat for this species appears highly variable, but generally grows in semi -shade in well-drained alluvial woods. The only populations known on the Wayne National Forest were found in Lawrence County on a dry early-successional hillside adjacent to a remnant oak-barrens community, and in lowlands along a creek. The hillside population seemed to respond favorably to prescribed burning, whereas the lowland population was threatened by flooding. General threats to the species are unknown, but may include exposure to sunlight after logging.	Known to occur on the Ironton Ranger District
Yellow Fringed Orchid *Platanthera ciliaris*	This species grows in a variety of sunny, wet situations in acidic, often sandy substrates, including pastures, wet fields, depressions, road banks, and open woods. Populations in mixed upland pine-hardwood forests in Ohio have responded favorably to prescribed burning which reduces the understory layer, allowing increased sunlight to the forest floor. Threats to the species include over-shading by growth of woody species, alteration of water supply, soil compaction, over collection of the attractive flowers.	Known to occur on the Marietta Unit of the Athens Ranger District.
Rock Scullcap *Scutellaria saxatilis*	The species occurs in a wide variety of semi -shaded habitats including moist and dry slopes, woods, and cliffs. Most Ohio collections are fro m dry woods. Threats to the species are unknown, but potentially include exposure to sunlight after logging and encroachment by invasive species.	Known to occur on the Ironton Ranger District and the Marietta Unit of the Athens Ranger District.
Pigeon Grape *Vitis cinerea*	This species typically grows in moist, open to semi -open habitats in alluvial soil of low woods, thickets, fencerows and stream banks. Threats to pigeon grape include the felling of trees upon which the species grows.	Known to occur on the Ironton Ranger District

Affected Environment
During 1999, the Region 9's National Forests gathered information and met in a series of sub-regional workshops to initiate review and update of the RFSS list. The goal of this update was to integrate new information, gathered since the previous update of March 8, 1994, along with newly adjusted designation criteria designed to better address the NFMA viability requirements for respective Region 9 National Forests. The resulting list was formally updated in February 2000. The WNF completed risk evaluations on all species occurring on the Regional list those were likely to occur within the WNF. Species were evaluated in terms of abundance, distribution, population trends, habitat integrity, and/or population vulnerability that increased their chances for long-term viability.

The Forest Plan, as amended to date, states that sensitive species will receive individualized attention (Appendix H-1). There are standards and guidelines for species with specific habitat requirements (Forest Plan 4-45 through 4-47; Amendment 8, C-6). The Forest's biologists review all projects to identify species occurrences, suitable habitat and effects that could occur by implementing the projects.

Effects Analysis

Alternative A
The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures (RPM) and Terms and Conditions (TC), contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition, existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.

Alternative B
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Alternative C
This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate.

Direct, Indirect, and Cumulative Effects

Black Bear

Under Alternative A, the black bear may be affected from the addition of some Indiana bat RPMs and TCs. Although the black bear is a generalist, it does prefer heavily wooded areas. The Indiana bat RPMs 1-4 and TCs 1-5 address canopy cover and structure of hardwood forest stands; these may have beneficial effects to the black bear since these RPMs and TCs would maintain wooded areas and protect mast producing trees (i.e., hickories). Conversely, Indiana bat RPM 6 and TC 8 could have a minimal short-term impact on black bear individuals. This RPM and TC require protection of known Indiana bat hibernacula, of which there is only one known on the Forest. Black bears could potentially use a hibernaculum for denning purposes, and once it is gated with bat-friendly gates as called for in TC 8, bears could not access the mine. This would equate to a minor inconvenience to the bear since it could realistically find numerous other denning sites nearby. Literally thousands of open mine portals exist on the Wayne. Bald eagle RPMs and TCs should have no impact on the black bear.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the black bear would be similar as those described for Alternative A.

Under Alternative C, the effects to the black bear would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. The black bear may be affected by some CRs. The Indiana bat CRs 4 and 5 may have beneficial effects to the black bear in that upland water holes may be created and undisturbed forested habitat may be maintained around known Indiana bat fall swarming sites. Additionally, American burying beetle (ABB) CRs 1-4 may benefit the bear.

Under these, the FWS suggests that road maintenance, reconstruction and construction be kept to a minimum within 10 air miles of occupied ABB habitat. Similarly, the FWS suggests that developed recreation sites be planned for and constructed outside occupied ABB habitat. Each of these would reduce bear-human interactions.

Black bear sightings continue to increase. Forest habitat is also on the increase in the WNF and southern Ohio (USFS 1991 as referenced in USFS 2001), thereby increasing the amounts of suitable habitat for the bear. While the majority of non-discretionary and discretionary elements of the BO has either no impact on the bear or its habitat, or may benefit the bear, the gating of known Indiana bat hibernacula remains as the one element of the three alternatives that could adversely affect black bear individuals. Bears that are moving into the Wayne National Forest from Kentucky and West Virginia may use some abandoned, open mine portals for denning, although we have no records of any currently using these mines. The gating of a small number of available den sites would likely only impact a very small number of bears. A recent inventory of abandoned mines on the WNF found hundreds of open portals that could provide suitable denning areas for the bear. Individuals seeking denning areas could easily find other sites

nearby. At this time, there are three mine openings gated on the WNF, and there are plans for several more to be gated. The loss of these few mine sites should not pose any cumulative adverse cumulative effects to the species.

Aquatic RFSS

Because the direct, indirect, and cumulative effects are similar for several aquatic species, they are combined into this one section. This effects analysis will address the river otter, hellbender, Ohio lamprey, western lake chubsucker, eastern sand darter, salamander mussel, round hickorynut, lilliput, little spectaclecase, and Wabash river cruiser.

Under Alternative A, the Indiana bat RPMs and TCs would have no impact on these aquatic species. However, some bald eagle RPMs and TCs could affect these species. Bald eagle RPM 1, TC 2 and 5 address the protection of bald eagle roosting habitat. Since the bald eagle most often roosts along water bodies, the protection of riparian trees can have beneficial effects to the aquatic species. Riparian trees provide shade and organic nutrients to the aquatic system, affecting the water temperature and the food base. Bald eagle TC 9 reaffirms that if eagles are found on the Forest, that populations would be managed and monitored as directed by the RPMs and TCs. Again, this would equate to protection of roost trees.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the aquatic species would be similar as those described for Alternative A.

Under Alternative C, the effects to the aquatic species would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. The CRs would have no impact on the aquatic species. While ABB CRs 1 and 2 address roads, and knowing roads are potential sources of sediment input into aquatic systems, none of the aquatic species occur within 10 air miles of occupied ABB habitat. If the ABB expanded its range to the Marietta Unit or the Ironton Ranger District, some aquatic species could benefit from ABB CR 1 and 2.

No adverse effects to aquatic RFSS or their habitats could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Bobcat

Under Alternative A, the bobcat may be affected from the addition of some Indiana bat RPMs and TCs. Although the bobcat is a generalist, it does utilize wooded areas and brushy areas. The Indiana bat RPMs 1-4 and TCs 1, 2, 4, and 5 address canopy cover and structure of hardwood forest stands; these may have beneficial effects to the bobcat since these RPMs and TCs would maintain wooded areas and protect mast producing trees (i.e., hickories) which provide food to their prey. Bald eagle RPMs and TCs should have no impact on the bobcat.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's

RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the bobcat would be similar as those described for Alternative A.

Under Alternative C, the effects to the bobcat would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. The bobcat may be affected by some CRs. The Indiana bat CRs 4 and 5 may have beneficial effects to the bobcat in that upland water holes may be created, and undisturbed forested habitat may be maintained around known Indiana bat fall swarming sites (i.e., these equate to less human activity). Additionally, American burying beetle CRs 1-3 may have beneficial effects to the bobcat. Under these, the FWS suggests that road maintenance, reconstruction and construction be kept to a minimum within 10 air miles of occupied ABB habitat. Similarly, the FWS suggests that developed recreation sites be planned for and constructed outside occupied ABB habitat. Each of these would reduce bobcat-human interactions.

Bobcats were thought to have been extirpated from Ohio by 1850, but observations by biologists, hunters, hikers, and trappers indicate they are moving back into the state. No adverse effects to the bobcat or its suitable habitat could be identified for any alternative, but some benefits could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Evening Bat

Under Alternative A, the evening bat may be affected from the addition of some Indiana bat RPMs and TCs. It uses similar roosting and foraging habitats as the Indiana bat, therefore protective measures identified in Indiana bat RPMs 1-4 and TCs 1-5 and 8 would have beneficial effects to the evening bat. Bald eagle RPMs and TCs should have no impact on the evening bat.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the evening bat would be similar as those described for Alternative A.

Under Alternative C, the effects to the evening bat would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. The evening bat may be affected by some CRs. The Indiana bat CRs 1-5 may have beneficial effects to the evening bat. These CRs call for bat inventories and enhanced bat identification skills for employees. In addition, the creation of upland waterholes would provide a source of water for the evening bat. Indiana bat CR 5 recommends that a quarter mile of undisturbed buffer be retained around known Indiana bat fall swarming sites. This CR could protect potential roost trees for this species. The ABB CRs 1-2 call for minimal road maintenance, reconstruction, and construction within 10 air miles of occupied ABB habitat. By keeping these activities to a minimum, tree removal (of potential roost trees) associated with these activities would be kept to a minimum. Likewise, the ABB CR 3 suggests developed recreation sites be planned and developed outside 10 air miles of occupied ABB habitat. Development of recreation sites may lead to tree removal (potential roost trees).

There is but one sighting of an evening bat on the Forest; the WNF is on the northern edge of its range. No adverse effects to the evening bat or its suitable habitat could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Cerulean Warbler
Under Alternative A, the cerulean warbler may be affected by the addition of some RPMs and TCs. There may be a beneficial effect to the warbler with the addition of Indiana bat RPMs 1-4. These RPMs address the goals of forest stand structure. The cerulean is generally a bird of closed canopy, mature forests. These RPMs call for the maintenance canopy cover in hardwood stands, and the protection of specific tree types. Furthermore, Indiana bat TC 1 requires that at least 60% canopy cover be maintained during hardwood timber harvests and TSI activities. Indiana bat TC 4 and 5 maintain a component of large, overmature trees in forest stands. Ceruleans will nest in the canopies of tall trees; perhaps some of the large, overmature trees would serve as potential nesting habitat. Similarly, bald eagle TC 5 may have beneficial effects to the cerulean warbler in that super-canopy trees are protected.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the cerulean warbler would be similar as those described for Alternative A.

Under Alternative C, the effects to the cerulean warbler would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat CR 4 and 5 may have beneficial effects to the cerulean. The creation of upland waterholes would provide a source of water for the cerulean warbler. Indiana bat CR 5 recommends that a quarter mile of undisturbed forested buffer be retained around known Indiana bat fall swarming sites. This CR could protect potential habitat for this species.

There are indications that there are population declines occurring to this species within its range. No adverse effects to the cerulean warbler or its suitable habitat could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Henslow's Sparrow
This is a grassland species. The RPMs and TCs and CRs in the BO address forested habitats used by the Indiana bat, bald eagle, and American burying beetle. Because of that, none of the RPMs, TCs, or CRs should impact the Henslow's sparrow. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Timber Rattlesnake
This species prefers the dry, closed canopy wooded areas of mixed deciduous or coniferous forests. Under Alternative A, the Indiana bat RPM 1 may have a beneficial effect on this species since it provide us with the goal to maintain adequate canopy cover in hardwood stands. Likewise, Indiana bat TC 1 calls for the maintenance of at least 60% canopy cover when conducting hardwood timber harvests and TSI activities. However, more important is Indiana bat TC 8 which protects a quarter mile area around known hibernacula. Hibernacula are associated with abandoned mines, which are rocky in nature. Timber rattlesnakes den in rocky areas. Bald eagle RPMs and TCs should have no impact on the timber rattlesnake.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. There is an existing Forest-wide Standard and Guideline that protects rock outcrops. The effects to the timber rattlesnake would be similar as those described for Alternative A.

Under Alternative C, the effects to the timber rattlesnake would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat CR 5may have a beneficial effect on the rattlesnake in that it protects a quarter mile area around known Indiana bat fall swarming sites. These are generally associated with abandoned mines that are rocky in nature. Timber rattlesnakes den in rocky areas. In addition ABB CR 1 and 2 recommends minimal road maintenance, reconstruction, and construction occur within 10 air miles of occupied ABB habitat. Similarly, the FWS suggests that developed recreation sites be planned for and constructed outside occupied ABB habitat. These could help limit human-rattlesnake interactions, one of the greatest threats to the species. One known occurrence of the timber rattlesnake occurs within 10 air miles of occupied ABB habitat.

Occurrences of the timber rattlesnake are limited to just a few areas on the WNF. The Ohio Division of Wildlife reports there may be only three remaining viable reproducing populations left in Ohio. No adverse effects to the timber rattlesnake or its suitable habitat could be identified for any alternative, but some benefits could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Grizzled Skipper and Olympia Marble

In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect these lepidopterans. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. The grizzled skipper is associated with disturbed openings in oak forests. The Olympia marble prefers dry ridgetops in and adjacent to open oak forests. The suppression of fire in our oak forests may contribute to the invasion of woody growth in the open oak forest habitats, which renders the habitat unsuitable for the grizzled skipper and Olympia marble.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the grizzled skipper and Olympia marble would be similar as those described for Alternative A.

Under Alternative C, the effects to the grizzled skipper and Olympia marble would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. CR 6 may benefit the grizzled skipper and Olympia marble. The FWS recommends that the use of pesticides could be restricted within the known range of the ABB on the WNF because of the chemical sensitivity of most insects.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size. One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that represent grizzled skipper habitat that could be managed with prescribed fire. More importantly, the known grizzled skipper site and Olympia marble site are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. The addition of these Terms and Conditions may impact individuals, but they are not likely to cause a trend to federal listing or loss of viability.

Juniper Sedge

Threats to the local viability of this species include fire suppression and overgrowth by woody vegetation. In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect this species. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively. The suppression of fire in our oak forests may contribute to the invasion of woody growth in these openings, which renders the habitat unsuitable for the juniper sedge.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the juniper sedge would be similar as those described for Alternative A.

Under Alternative C, the effects to the juniper sedge would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Another threat to local viability of this species includes soil compaction. ABB CRs 1 and 2 recommend minimal road maintenance, reconstruction, and construction occurs within 10 air miles of occupied ABB habitat. Areas of soil compaction could be reduced by these CRs.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size. One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that

represent grizzled skipper habitat that could be managed with prescribed fire. More importantly, the known juniper sedge sites are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. These Terms and Conditions may impact individuals, but they are not likely to cause a trend to federal listing or loss of viability.

Bicknell's Panicgrass, Yellow Gentian, Striped Gentian, Butternut, Philadelphia Panicgrass, Pigeon Grape

These plants are not grouped here because they share similar habitat requirements; instead they require a variety of habitats. They are grouped together because after review of the RPMs, TCs, and CRs, there were no actions that could be identified that would impact these species. Therefore, no adverse cumulative effects are expected to occur to these species with the implementation of any alternative.

Umbrella Magnolia

This species is threatened by activities that open the canopy. Therefore, this species could benefit from Indiana bat TC 1 in Alternative A. At least 60% canopy cover is required under this TC. Indiana bat TC 8 may benefit the species since this relates to maintaining a one-quarter mile forested buffer around known Indiana bat hibernacula. Bald eagle RPMs and TCs should have no impact on the evening bat.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the umbrella magnolia would be similar as those described for Alternative A.

Under Alternative C, the effects to the umbrella magnolia would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat CR 5 may benefit the species since this relates to maintaining a one-quarter mile forested buffer around known Indiana bat fall swarming sites. ABB CRs 1 and 2 recommend minimal road maintenance, reconstruction, and construction occurs within 10 air miles of occupied ABB habitat. This may reduce the amount of forested areas opened for road corridors and maintain closed canopy conditions in some places.

No adverse effects to the umbrella magnolia or its suitable habitat could be identified for any alternative, but some benefits could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Blue Scorpionweed and Yellow Fringed Orchid

These species reportedly respond favorably to prescribed fire. In Alternative A, Indiana bat TC 8 and bald eagle TC 6 may adversely affect these species. These TCs require that no prescribed fire occur within one quarter mile of known hibernacula or within one half mile of occupied bald eagle sites, respectively.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the blue scorpionweed and yellow fringed orchid would be similar as those described for Alternative A.

Under Alternative C, the effects to the blue scorpionweed and yellow fringed orchid would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. No CRs would impact this species.

Prescribed fire would be excluded from certain areas of the Forest if Alternatives A and C were selected. While Alternative B is the no action alternative, biologists would also recommend prescribed fire be restricted from these areas even though there was no Forest Plan standard or guideline calling for such management. However, these areas would be rather small in size. One Indiana bat hibernaculum is known to be present on the WNF, and that equates to an area one-half mile in diameter where prescribed fire could not be used. No occupied bald eagle sites occur on the WNF, so no restrictions on prescribed fire would be required by bald eagle TC 6 at this time. Additional hibernacula may be found in the future, thereby increasing the acreage of forest where prescribed fire could not be used. Similarly, the bald eagle occupied sites may occur in the future. The WNF is over 230,000 acres in size and there are numerous areas that possess suitable habitat that could be managed with prescribed fire. More importantly, the known blue scorpionweed and yellow-fringed orchid sites are not within the one-quarter mile area around the Indiana bat hibernaculum. Because of these reasons, adverse cumulative effects to the species would be minimal. These Terms and Conditions may impact individuals, but they are not likely to cause a trend to federal listing or loss of viability.

Rock Skullcap

This species is threatened by activities that open the canopy. Therefore, this species could benefit from Indiana bat RPM 1 and TC 1 in Alternative A. Both require adequate canopy cover, and TC 1 specifically requires at least 60% canopy cover be maintained. Indiana bat TC 8 may benefit the species since this relates to maintaining a one-quarter mile forested buffer around known Indiana bat hibernacula. Bald eagle RPMs and TCs should have no impact on the evening bat.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. The effects to the rock skullcap would be similar as those described for Alternative A.

Under Alternative C, the effects to the rock skullcap would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat CR 5 may benefit the species since this relates to maintaining a one-quarter mile forested buffer around known Indiana bat fall swarming sites.

No adverse effects to the rock skullcap or its suitable habitat could be identified for any alternative, but some benefits could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Determination of Effects

After review of the direct, indirect and cumulative effects of the alternatives on the RFSS, a determination of "no impact", "beneficial effect" or "may impact individuals but it is not likely to cause a trend to federal listing or loss of viability" was applied for each species. Table 3B summarizes these determinations for each species by each element of the alternatives. The following abbreviations were used in Table 3B because of the table's size.

Abbreviation	**Definition**
IB	Indiana bat
BE	Bald eagle
ABB	American burying beetle
RPM	Reasonable and Prudent Measure
TC	Term and Condition
CR	Conservation Recommendation
1	No impact
2	Beneficial effect
3	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability

Table 3B. Summary of Effects Determinations for the Regional Forester Sensitive Species

	Black bear	River otter	Bobcat	Evening bat	Cerulean warbler	Henslow's sparrow	Timber rattlesnake	Hellbender	Ohio lamprey	W. lake chubsucker	E. sand darter	Salamander mussel	Round hickorynut	Lilliput	Little spectaclecase	Wabash river cruiser	Grizzled skipper	Olympia marble	Juniper sedge	Bicknell's panicgrass	Yellow gentian	Striped gentian	Butternut	Umbrella magnolia	Philadelphia panicgrass	Blue scorpionweed	Yellow fringed orchid	Rock skullcap	Pigeon grape
Alt. A, B & C																													
IB RPM 1	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
IB RPM 2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 3	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 4	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 1	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1
IB TC 2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 3	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. A & B)	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. C)	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 5	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 8	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	3	3	3	1	1	1	1	2	1	3	3	2	1
IB TC 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	Black bear	River otter	Bobcat	Evening bat	Cerulean warbler	Henslow's sparrow	Timber rattlesnake	Hellbender	Ohio lamprey	W. lake chubsucker	E. sand darter	Salamander mussel	Round hickorynut	Lilliput	Little spectaclecase	Wabash river cruiser	Grizzled skipper	Olympia marble	Juniper sedge	Bicknell's panicgrass	Yellow gentian	Striped gentian	Butternut	Umbrella magnolia	Philadelphia panicgrass	Blue scorpionweed	Yellow fringed orchid	Rock skullcap	Pigeon grape
Alt. A, B & C																													
BE RPM 1	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 2	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 5	1	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	1	1	1	1	1	1	3	3	1	1
BE TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 9	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1

	Black bear	River otter	Bobcat	Evening bat	Cerulean warbler	Henslow's sparrow	Timber rattlesnake	Hellbender	Ohio lamprey	W. lake chubsucker	E. sand darter	Salamander mussel	Round hickorynut	Lilliput	Little spectaclecase	Wabash river cruiser	Grizzled skipper	Olympia marble	Juniper sedge	Bicknell's panicgrass	Yellow gentian	Striped gentian	Butternut	Umbrella magnolia	Philadelphia panicgrass	Blue scorpionweed	Yellow fringed orchid	Rock skullcap	Pigeon grape
Alt. C																													
IB CR 1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 3	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 4	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 5	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1
BE CR 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 1	2	1	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1
ABB CR 2	2	1	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1
ABB CR 3	2	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 6	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1

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Appendix C
Proposed Forest Plan Revisions

I. Proposed changes to existing Forest Management Goals

For Alternatives A and C, the following would be moved from the Forest Management Goals section of the Forest Plan, page 4-2 under "Wildlife and Fish", to page 4-3 under "Federally Endangered and Threatened Species".

Manage endangered and threatened plant and animal species to population sizes and distribution where they are no longer threatened, in cooperation with other State and Federal agencies.

For Alternatives A and C, the following would be added to the Forest Management Goals section of the Forest Plan, page 4-3 under "Federally Endangered and Threatened Species".

Federally Endangered and Threatened Species

The following reasonable and prudent measures are necessary and appropriate to minimize take of the Indiana bat and minimize any adverse impacts to the bald eagle (USDI FWS, 2001). The Biological Opinion's terms and conditions are specific actions on how these measures must be met. The terms and conditions are incorporated in the Forest-wide Standards and Guidelines, pages 4-44. The following reasonable and prudent measures outlined below fall within the Forest Service's responsibilities to conserve Federally listed species as outlined in sections 2(c)(1) and 7(a)(1) of the Endangered Species Act.

Indiana Bat
Maintain adequate canopy cover in hardwood stands (depending on the size of the stands) to provide Indiana bat foraging habitat.

Provide roosting habitat by preserving shagbark hickory or shellbark hickory trees.

No snag removal (snags with a dbh>6 inches), except where they pose an imminent threat to human safety.

Maintain a component of large, over-mature trees, in hardwood stands, when possible.

These trees will ensure a continuous supply of large roost trees for the bat.

Tree removal activity will be closely monitored and reported on a project-by-project basis to ensure that impacts of incidental take associated with future proposed projects are appropriately minimized.

Protect all known Indiana bat hibernacula on the Wayne National Forest.

Bald Eagle

Reduce the potential of removing unknown communal night roosts.

Discourage continuous and/or repeated human disturbance where wintering bald eagles (November 15 to March 15) are known to have communal night roosts or form daily congregations (as defined in the Northern States Bald Eagle Recovery Plan) on all lands or waters managed by the Wayne National Forest.

Use appropriate smoke management techniques to minimize potential impacts of smoke inversion to occupied communal night roosts, daytime concentrations, or occupied breeding territories.

In association with the predicted removal of this species from the list of endangered and threatened wildlife, assist the U. S. Fish and Wildlife Service and the Ohio Division of Wildlife in monitoring the status of the species on the Wayne National Forest up through the five years following delisting, according to requirements outlined in the Endangered Species Act.

II. Proposed changes to Forest-wide Standards and Guidelines

Alternative A would require the following revisions to the Forest Plan, p. 4-44.

Federally Endangered and Threatened Species

~~Consultation with the U. S. Fish and Wildlife Service and Ohio Department of Natural Resources indicates that there are presently no federally listed endangered, threatened, or proposed species within the vicinity of the Wayne National Forest which would be affected by management of the Forest. Recent studies conclude that it is doubtful that the Indiana bat, whose range extends into Ohio, inhabits the Wayne National Forest. The Bald Eagle and American Peregrine Falcon occur in the Forest only as migrants or transients are essentially unaffected by forest management.~~

~~Should new information indicate the presence of a federally-listed or proposed species within the Forest, consultation will be initiated with the U. S. Fish and Wildlife Service to develop species management plans and standards, as necessary to protect and, as possible, enhance habitat of such species.~~

~~The Forest will assess the feasibility of establishing two breeding pairs of bald eagles as the Wayne National Forest's contribution to the Northern States Bald Eagle Recovery Plan in cooperation with the Ohio Department of Natural Resources and U. S. Fish and Wildlife Service.~~

Consultation with the U. S. Fish and Wildlife Service indicates nine federally listed species are present in or near the Wayne National Forest. These species include:

Indiana bat	*Myotis sodalis*

Bald eagle	*Haliaeetus leucocephalus*
American burying beetle	*Nicrophorus americanus*
Fanshell	*Cyprogenia stegaria*
Pink mucket pearly mussel	*Lampsilis abrupta*
Northern wild monkshood	*Aconitum noveboracense*
Running buffalo clover	*Trifolium stoloniferum*
Small whorled pogonia	*Isotria medeoloides*
Virginia spiraea	*Spiraea virginiana*

Descriptions of the life histories, occurrences, habitats, and other related information about these species can be found in the Biological Assessment, prepared for the Forest Plan. As a result of formal consultation, the U. S. Fish and Wildlife Service provided specific Terms and Conditions through its Biological Opinion for the Indiana bat and bald eagle. The Terms and Conditions minimize the take of federally listed species and are included below as Forest-wide Standards and Guidelines.

Indiana Bat Standards and Guidelines

Terms and Conditions related to the Indiana bat

1. When conducting hardwood timber harvests and completing timber stand improvement (TSI) within hardwood stands, maintain at least 60 percent canopy cover whenever possible.

2. Shagbark hickory or shellbark hickory trees shall not be cut during TSI activities, unless the density of trees of these 2 species, combined, exceeds 16 trees/acre. If present, at least 16 live shagbark and shellbark hickory (combined) greater than 11 inches dbh must be maintained per acre.

3. Snags that are potential Indiana bat habitat shall not be removed for TSI purposes. Firewood cutting permits should clearly state that standing dead trees may not be taken.

4. To maintain a component of large, over mature trees at least 3 live trees per acre > 20 inches dbh should be maintained in the stand. The 3 trees should be any of the preferred species listed below or a combination of the species listed below. (A tree with < 10 percent live canopy should be considered a snag and would not count towards the 3 trees to be left). These must be among the largest trees of these species remaining in the stand. An additional 6 live trees per acre > 11 inches dbh (of the species listed below) must also be maintained. (The "per acre" requirement can be expressed as the average per acre on a stand-wide basis, depending on the definition of a stand).

shagbark hickory (*Carya ovata*)
shellbark hickory (*Carya laciniosa*)
bitternut hickory (*Carya cordiformis*)
silver maple (*Acer saccharinum*)
green ash (*Fraxinus pennsylvanica*)

white ash (*Fraxinus americana*)
eastern cottonwood (*Populus deltoides*)
northern red oak (*Quercus rubra*)
post oak (*Quercus stallata*)
white oak (*Quercus alba*)
slippery elm (*Ulmus rubra*)
American elm (*Ulmus americana*)
black locust (*Robinia pseudoacacia*)

(This list is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as identified.)

If there are no trees > 20 inches dbh to leave standing, 16 live trees per acre must be left, and these must include the largest specimens of the preferred species remaining in the stand.

5. During non-hibernation season, Wayne National Forest will retain all shagbark and shellbark hickory trees over 6 inches dbh and all live trees, of any species, over 6 inches dbh that are hollow, have major splits, or have broken tops, unless they are a safety hazard. Additionally, the Wayne National Forest will retain a minimum of 12 live trees per acre over 6 inches dbh, of any species, with large areas of loose bark, unless they are a safety hazard. Harvesting of shagbark and shellbark hickory is allowed on the forest during the Indiana bat hibernating season (after September 15 and before April 15) except as might be restricted by the preceding terms and conditions #2 and #4.

6. To ensure that the exemption of incidental take is appropriately documented the Fish and Wildlife Service will implement a tiered programmatic consultation approach. As individual projects are proposed under the Forest Plan, Wayne National Forest shall provide project-specific information to Reynoldsburg Ohio Field Office that (1) describes the proposed action and the specific area to be affected, (2) identifies the species that may be affected, (3) describes the manner in which the proposed action may affect listed species, and the anticipated effects, (4) specifies that the "anticipated effects from the proposed project are similar to those anticipated in the programmatic biological opinion," (5) a cumulative total of take that has occurred thus far under the tier I biological opinion, and (6) describes any additional effects, if any, not considered in the tier I consultation.

The Fish and Wildlife Service will review the information provided by the Wayne National Forest for each proposed project and this project-specific review is appropriately documented. During this review if it is determined that an individual proposed project is not likely to adversely affect listed species, the Fish and Wildlife Service will complete its documentation with a standard concurrence letter that refers to this Biological Opinion, the tier I programmatic document (i.e., it "tiers" to it), and specifies that the Fish and Wildlife Service concurs that the proposed project is not likely to adversely affect listed species or designated critical habitat. If it is determined that the proposed project is likely to adversely affect listed species or designated critical habitat, then the Fish and Wildlife Service completes a tier II biological opinion with a project-specific incidental take statement.

Because habitat manipulation acreage is being used to monitor levels of incidental take, for each proposed individual project, within the tree removal activities listed below, provide Reynoldsburg Ohio Field Office with a description of the project that includes the location, type of activity, and total acreage to be disturbed by the individual project. When reporting the type of activity, it must correspond to one of the following management activities:

• Hardwood thinning and uneven-aged cuts	2250 acres
• Pine thinning and uneven-aged cuts	250 acres
• Timber stand improvement	2500 acres
• Prescribed fire	2500 acres
• Permanent road construction	32 acres
• Temporary road construction	37 acres
• Oil and gas wells road construction	25 acres
• Trail construction (hiking, horse and ORV)	160 acres
• Creation of wildlife openings	352 acres
• Minerals development	2125 acres
• Special use permits (roads and utility corridors)	125 acres
• Hazard tree removal	125 trees
• Closing of underground entrances	250 acres

Each project proposal must report how the individual project increases the cumulative forested acres (or number of trees) affected within each of the above management activities and report on the total acreage (or number of trees) remaining in each management activity. Your letter requesting the project specific review must include your determinations that the proposed project is consistent with this programmatic biological opinion and incidental take statement and request that the proposed project be tiered to this programmatic biological opinion.

7. Any dead bats located on the Wayne National Forest, where the species determination is unclear, should be immediately reported to Reynoldsburg Ohio Field Office [(614) 469-6923], and subsequently transported on ice to that office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to Reynoldsburg Ohio Field Office. Reynoldsburg Ohio Field Office will make a species determination on any dead or moribund bats found on the Wayne National Forest. If an Indiana bat is identified, Reynoldsburg Ohio Field Office will contact the appropriate Fish and Wildlife Service Law Enforcement office. (The handling part of this term and condition does not apply to those specific individuals who are permitted, as agents of the State, for conducting work on Federally listed bat species.)

8. If additional Indiana bat hibernacula are discovered on the Wayne National Forest, bat-friendly gates shall be installed, as funding allows, to prevent unauthorized entry. Human access to areas surrounding the known hibernacula will be deterred by closing or relocating trails that lead to or pass within easy viewing

distance of hibernacula. A one-quarter mile of undisturbed forested buffer should be retained surrounding all known hibernacula where the Forest Service has jurisdiction. Undisturbed forested buffer is defined as an area where trail and road construction and tree harvesting activities are prohibited. Prescribed fires should not occur within one-quarter mile of all known hibernacula on the Wayne National Forest, where the Forest Service has jurisdiction, during the fall swarming and hibernation period of the Indiana bat. When developing prescribed burn plans, Wayne National Forest personnel should ensure that smoke management in the vicinity of known hibernacula will prevent smoke from entering into the known hibernacula.

9. Before backfilling any mine openings, such as a portal entrance or subsidence depression with a developed opening, a survey for potential bat presence will be required during the fall swarming period. This period usually falls between mid-August to mid-October. The survey is optional if the closure will be accomplished by installing a bat-friendly gate.

Terms and Conditions related to the Bald Eagle

1. Conduct a minimum of three annual winter (early, middle, and late) searches, as funds are available, (aerial and/or ground) to locate any previously unknown communal night roosts or eagle concentrations following criteria outlined in the Northern States Bald Eagle Recovery Plan (USDI FWS 1983). Searches will focus on areas eagles are known to frequent, where congregations of eagles have been previously documented, or where there are concentrated food sources (such as poultry farms, hog lots, aquiculture facilities, etc.) near lands or waters managed by the WNF.

2. Any bald eagle communal night roosts and concentrations (including nests) discovered during winter surveys or during any additional field surveys of proposed project areas, shall be protected following guidelines outlined in the Northern States Bald Eagle Recovery Plan (USDI FWS 1983).

3. Any bald eagle nests discovered on Wayne National Forest lands shall be immediately reported to Reynoldsburg Ohio Field Office and the Ohio Department of Natural Resources, Division of Wildlife (ODNR-DOW).

4. By June 1 of each year, provide an annual report to Reynoldsburg Ohio Field Office and the ODNR-DOW, that includes the following information: 1) results of any winter searches for communal night roosts and concentrations, including mid-winter surveys conducted in cooperation with the Service/ODNR-DOW, and 2) discovery of any nesting territories on lands managed by the Wayne National Forest. If no surveys have been conducted and no nesting territories discovered on Wayne National Forest lands during an annual reporting period, an annual report should be submitted with a statement to this effect.

5. Protect super-canopy (Tyrell *et al.* 1998) or other identified congregation roost trees along major river corridors, lakes, and lands managed by the WNF, in addition to adhering to standards and guidelines outlined in the Forest Plan for riparian corridors.

In order to minimize potential impacts of smoke inversion to occupied communal night roosts, daytime concentration sites, or occupied breeding territories, it is necessary to:

6. Consider all bald eagle communal night roosts, daytime concentration sites, or breeding sites (if and when discovered on the WNF) as occupied bald eagle sites. Prescribed fires should not be conducted within ½ mile of occupied bald eagle sites. In order to prevent smoke inversion from occurring at all occupied bald eagle sites, WNF should conduct any planned prescribed fire (in areas outside the ½ mile radius of occupied sites) only when the following have been considered: wind direction, speed, mixing height and transport winds needed in burn planning and implementation, to minimize smoke from drifting toward any occupied sites.

7. By June 1 of each year, provide an annual report to Reynoldsburg Ohio Field Office, that includes any documented case of a prescribed fire that behaved contrary to predicted movement patterns and which resulted in a confirmed adverse impact to bald eagles.

8. For any prescribed fire that could potentially impact Bald eagles, provide Reynoldsburg Ohio Field Office with the opportunity to review burn plans with Wayne National Forest Fire Management Officer prior to the burn plan being approved.

10. Should the bald eagle be found on the Wayne National Forest, populations should be monitored and managed as directed by this biological opinion and the species delisting monitoring plan for a period of five years after delisting (USFWS, 2001)

Further information about conservation of federally listed species on or near the Wayne National Forest can be found in Appendix J.

Alternative C would require the same changes as listed above for Alternative A, with the exception of Indiana bat Term and Condition 4, 5 and 6, and bald eagle Term and Condition 4. Four new species of preferred trees would be added to this Standard and Guideline under Alternative C

<u>Indiana bat #4</u>: To maintain a component of large, over-mature trees, at least 3 live trees per acre > 20 inches dbh should be maintained in the stand. The three trees should be any of the preferred species listed below or a combination of the species listed below. (A tree with < 10% live canopy should be considered a snag and would not count towards the three trees to be left). These must be among the largest trees of these species remaining in the stand. An additional 6

live trees per acre > 11 inches dbh (of the species listed below) must also be maintained. (The "per acre" requirement can be expressed as the average per acre on a stand-wide basis, depending on the definition of a stand). If there are no trees greater than 20 inches dbh to leave standing, 16 live trees per acre must be left, and these must include the largest specimens of the preferred species remaining in the stand.

Shagbark hickory
Shellbark hickory
Bitternut Hickory
Silver maple
Green ash
White ash
Eastern cottonwood
Northern red oak
Post oak
White oak
Slippery elm
American elm
Black locust
Pignut hickory*
Red maple*
Sugar maple*
Black oak*

This list of trees is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as identified.

(*) Species added to the list after completion of the Biological Opinion.

Indiana bat 6: Consult and coordinate with the U. S. Fish and Wildlife Service as described in Appendix J.

Indiana bat 7: The U. S. Fish and Wildlife Service shall be contacted (as described in Appendix J) if any dead bats are found in the Forest, or if an Indiana bat is identified.

Bald eagle 4: Consult and coordinate with the U. S. Fish and Wildlife Service, and complete administrative reporting requirements as detailed in Appendix J.

III. Proposed Addition to Forest Plan (Appendix J)

(This Appendix would be added to the Forest Plan under Alternative C.)

Conservation Plan for Federally Listed Threatened and Endangered Species

The purpose of this Conservation Plan is to identify and document actions the Forest Service will take to conserve threatened and endangered species on the Wayne National Forest under Section 7(a)(1) and 7(a)(2) of the Endangered Species Act (ESA) of 1973 as amended. Through the Biological Assessment and Biological Opinion processes these actions have been determined to maintain quality habitat over the long term for these species across the entire Wayne NF (USFS 2001, USFWS 2001b).

Section 7(a)(1) of the Endangered Species Act states that Federal Agencies should take a proactive approach to conserving endangered species.

"All other Federal agencies shall, in consultation with and with the Secretary, utilize their authorities in furtherance of the purposes of this Act, by carrying out programs for the conservation of endangered species and threatened species pursuant to Section 4 of this Act."

Section 7(a)(2) of the Endangered Species Act states that Federal agencies shall consult with the U. S. Fish and Wildlife Service.

"Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such an agency is granted an exemption for such action by the committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available."

All actions in the Conservation Plan are dependent on available funding through annual budgets; however, non-compliance with a mandatory term or condition would trigger the need for further consultation with the U. S. Fish and Wildlife Service. In the event that a species is recovered and de-listed, some conservation actions may change.

The Conservation Plan is subject to change as new information is obtained, and as Forest Plan monitoring occurs. Such changes will be made following consultation with, and assistance of, the U. S. Fish and Wildlife Service.

Federally Listed Species

According to the U.S. Fish and Wildlife Service, nine federally listed species have been identified as occurring on or near the Wayne National Forest (USFWS 2001a, 2002) (Table 1).

Table 1.

Species	Common Name	Status
Aconitum noveboracense	Northern wild monkshood	Threatened
Trifolium stoloniferum	Running buffalo clover	Endangered
Isotria medeoloides	Small whorled pogonia	Threatened
Spiraea virginiana	Virginia spiraea	Threatened
Cyprogenia stegaria	Fanshell	Endangered
Lampsilis abrupta	Pink mucket pearly mussel	Endangered
Nicrophorus americanus	American burying beetle	Endangered
Myotis sodalis	Indiana bat	Endangered
Haliaeetus leucocephalus	Bald eagle	Threatened

To meet the consultation requirements under Section 7(a)(2) of the Endangered Species Act, the Forest Service completed a Biological Assessment (USFS 2001) for the Wayne National Forest Land and Resource Management in March 2001. The Biological Assessment provides an in depth review of the life history, current status, species range, potential habitat on the Wayne National Forest, and threats and limiting factors for the nine species. This information can be found on the following pages in the Biological Assessment: Northern monkshood (BA pages 5-1 to 5-5); Running buffalo clover (BA pages 5-17 to 5-20); Small whorled pogonia (BA pages 5-33 to 5-37); Virginia spiraea (BA pages 5-47 to 5-50); Fanshell (BA pages 6-1 to 6-4); Pink mucket pearly mussel (BA pages 6-13 to 6-15); American burying beetle (BA pages 7-1 to 7-4); Indiana bat (BA pages 7-11 to 7-17); and Bald eagle (BA pages 7-31 to 7-35).

Relationship to Other Documents

Upon completion of the Biological Assessment for the Wayne National Forest Land and Resource Management, the U. S. Fish and Wildlife Service responded with a Biological Opinion (BO) on the Wayne National Forest Land and Resource Management Plan (USFWS 2001b) on September 20, 2001. The BO addressed three of the nine species: American burying beetle, Indiana bat, and bald eagle. The U. S. Fish and Wildlife Service determined that activities outlined in the Forest Plan were likely to adversely affect these three species. The remaining six species continue to be addressed through informal consultation with the U. S. Fish and Wildlife Service since activities outlined in the Forest Plan are not likely to adversely affect them.

This BO provided non-discretionary terms and conditions that would minimize the potential for incidental take for the Indiana bat and bald eagle. In addition, it provided conservation recommendations that could be implemented by the Wayne National Forest to meet responsibilities under Section 7(a)(1) for the Indiana bat, bald eagle and American burying beetle. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information (BO page 44).

Additional guidance to conserve and recover each threatened or endangered species throughout its range is provided in a species-specific recovery plan. Each recovery plan has been developed by a team of scientists who are considered experts on the species being addressed. A National Forest such as the Wayne National Forest may encompass only a small part of the range of a species and all recovery objectives may not be applicable. A copy of each recovery plan can be located in the Athens Unit office, the Ironton Ranger District office, and the Supervisor's Office.

Northern Monkshood Recovery Plan (USFWS 1983a)
Northern States Bald Eagle Recovery Plan (USFWS 1983b)
Pink Mucket Pearly Mussel Recovery Plan (USFWS 1985)
Running Buffalo Clover Recovery Plan (USFWS 1989)
Fanshell Recovery Plan (USFWS 1991a)
American Burying Beetle Recovery Plan (USFWS 1991b)
Small Whorled Pogonia Recovery Plan (USFWS 1992a)
Virginia Spiraea Recovery Plan (USFWS 1992b)
Indiana Bat Revised Recovery Plan (USFWS March 1999)

Development of the Conservation Plan

This Conservation Plan includes a summary of the conservation program activities that have occurred recently or are ongoing, and the actions that will be implemented with respect to Federally endangered and threatened species in response to ESA Section 7(a)(1) and (2) requirements. While there are distinct differences in the requirements of each of these sections, in practice there is a great deal of overlap between the actions being proposed to comply with both of these sections. For purposes of developing a comprehensive plan that provides for continuity in implementation and ease of reference, the actions will be presented as one plan.

Some of the items included in this Conservation Plan are non-discretionary activities that were issued in the BO (Section 7(a)(2) requirements). Theses include Reasonable and Prudent Measures, which are considered Forest Management Goals, and Terms and Conditions, which are considered Forest-wide Standards and Guidelines.

As part of the BO, the U. S. Fish and Wildlife Service suggested management activities that meet ESA's Section 7(a)(1) requirements. These activities are known as Conservation Recommendations are considered discretionary activities. In other words, these are activities that Forest managers can implement to further minimize or avoid adverse effects of a proposed action on Federally listed species, to help implement recovery plans, or to develop information. These are not considered mandatory by the U. S. Fish and Wildlife Service, but are activities that may be conducted at the discretion of the Forest Service as time and funding allow. The Forest Service is required to notify the U. S. Fish and Wildlife Service when any Conservation Recommendations are implemented that minimize or avoid adverse effects or provide a benefit to Federally listed species.

Format of the Conservation Plan

This Conservation Plan is arranged into three sections: (1) Section I highlights some of the more recent activities the Forest Service has implemented to protect and conserve Federally listed species; (2) Section II displays direction and guidance that is applicable to all nine Federally listed species; and (3) Section III outlines the direction and guidance specific for the Indiana bat, bald eagle and American burying beetle.

Within each section, activities which are administrative in nature (Administrative Requirements) and easily implemented through existing authorities and program of work decisions are identified. Non-discretionary Reasonable and Prudent Measures and Terms and Conditions included in the "Forest Plan Amendment for Threatened and Endangered Species" are shown as Forest Management Goals and Forest-wide Standards and Guidelines. Forest Management Goals, Forest-wide Standards and Guidelines, and Conservation Recommendations are displayed by type of activity (Habitat Protection and Improvement; Protection of Individuals; Inventory, Analysis and Monitoring; and Education and Awareness).

Items that are non-discretionary (as determined by the U. S. Fish and Wildlife Service in the BO) are identified in italics.

Implementation of the Conservation Plan

Responsibilities for implementation of this Conservation Plan rest primarily with personnel of the Wayne National Forest. Some work, however, will be done cooperatively with the Ohio Division of Wildlife or U. S. Fish and Wildlife Service staff or other partners.

I. Conservation Program Efforts on the Wayne National Forest

The Forest Service has a proactive conservation program that concurrently addresses protection and recovery of the nine Federally listed species on the Wayne National Forest. This work generally falls within one of four categories: (1) Habitat Protection and Improvement; (2) Protection of Individuals; (3) Inventory, Analysis, and Monitoring; and (4) Education and Awareness. The following highlights a few examples of the recent projects that have occurred or are ongoing for these federally listed species.

A. Habitat Protection and Improvement

- The Forest Service has planted native tree seedlings in riparian areas along the Little Muskingum River, Symmes Creek, and Pine Creek as a way to restore forest cover along streams. By doing this, the Forest Service is promoting bank stability, shade, organic matter production, and sedimentation reduction along streams where host fish for the pink mucket pearly mussel and fanshell occur. Reforestation of riparian areas also plays a role in improving downstream water quality and provides a source for future bald eagle roosting trees.

B. Protection of Individuals

- The first Indiana bat was captured on the Wayne National Forest in 1997. In February of 1999, Indiana bat presence was confirmed on the Wayne National Forest when a limestone mine was entered and approximately 150 Indiana bats were found. This mine has since been designated as a Priority 3 area. A bat gate has since been installed on this known Indiana bat hibernaculum to protect individuals from human disturbance.

Bat gates have been installed on two additional mine openings, and plans are in the works for the installation of additional bat gates in partnership with the U. S. Fish and Wildlife Service and Ohio Division of Minerals Management.

C. Inventory, Analysis, and Monitoring

- Approximately 260 acres of National Forest System lands on the Ironton Ranger District (Scioto County) were surveyed for the small whorled pogonia in June/July of 1997. No individuals were found on National Forest System lands.

- In 1991, the southeastern portion of Ohio, including portions of all three units of the Wayne National Forest was surveyed for Virginia spiraea. No individuals were found on National Forest System lands.

- A survey for running buffalo clover was completed on approximately 320 acres of National Forest System lands, on the Ironton Ranger District, during May of 1996. Survey efforts were focused primarily along streams, trails, and old roads. No individuals were found.

- Surveys for northern monkshood, running buffalo clover, small whorled pogonia, and Virginia spiraea occur on a project-by-project basis where suitable habitat exists, but no individuals have been found to date on the Wayne National Forest.

- The fanshell and pink mucket pearly mussel occur in the Ohio River and in the adjacent Muskingum River. Suitable habitat is not present within the Wayne National Forest. However, a comprehensive aquatic inventory was completed for the Little Muskingum River watershed and Ohio River tributaries in 1999 and 2000 in partnership with the Ohio Division of Natural Areas and Preserves and Otterbein College. While the fanshell and pink mucket pearly mussel were not found during the inventory, some of their host fish were documented using streams within the Wayne National Forest.

- The Forest Service conducted mid-winter bald eagle surveys during Winter 2001-2002 on the Wayne National Forest. Sightings have occurred at sites outside, but nearby, the Wayne National Forest.

- The Forest Service entered into a partnership with the U. S. Fish and Wildlife Service to study Indiana bat roost tree characteristics. Indiana bats were tracked for a period of time using radio telemetry. The study is complete and information about roost trees has been incorporated into a proposed Indiana bat standard and guideline for the Forest Plan Amendment.

- Forest Service personnel have conducted mist net surveys of mine openings during the fall swarming season since 1997. Indiana bats were captured during the 1998, 1999 and 2002 fall swarming season at an abandoned mine portals.

- The Forest Service has initiated an analysis that will identify potential American burying beetle reintroduction sites on the Wayne National Forest. This follows a Forest

Service analysis of suitable habitat for this species based on soil characteristics. Potential partners in this reintroduction effort include the U. S. Fish and Wildlife Service, the Ohio Division of Wildlife, and The Ohio State University.

D. Education and Awareness

- Educational signs were developed and have been placed on newly planted riparian areas to raise public awareness of the importance of forested riparian areas for fish and wildlife resources.

- The Forest Service has constructed bat boxes for display at area festivals, and provides free copies of bat box construction instructions to festival visitors. While this does not target the Indiana bat specifically, it is an attempt to raise public awareness of the value of bats in general.

II. Conservation Direction and Guidance for All Species

The following section includes direction that applies to all nine federally listed species.

Italicized actions are those that are non-discretionary.

Administrative Requirements

To ensure that the exemption of incidental take is appropriately documented, the U. S. Fish and Wildlife Service will implement a tiered programmatic consultation approach. As individual projects are proposed under the Forest Plan, the Forest Service shall provide project-specific information to the U. S. Fish and Wildlife Service Reynoldsburg Field Office that (1) describes the proposed action and the specific area to be affected, (2) identifies the species that may be affected, (3) describes the manner in which the proposed action may affect listed species, and the anticipated effects, (4) specifies that the "anticipated effects from the proposed project are similar to those anticipated in the programmatic biological opinion," (5) a cumulative total of take that has occurred thus far under the tier I biological opinion, and (6) describes any additional effects, if any, not considered in the tier I consultation.

The U. S. Fish and Wildlife Service will review the information for each proposed project and this project-specific review is appropriately documented. During this review if it is determined that an individual proposed project is not likely to adversely affect listed species, the U. S. Fish and Wildlife Service will complete its documentation with a standard concurrence letter that refers to the biological opinion, the tier I programmatic document (i.e., it "tiers" to it), and specifies that the U. S. Fish and Wildlife Service concurs that the proposed project is not likely to adversely affect listed species or designated critical habitat. If it is determined that the proposed project is likely to adversely affect listed species or designated critical habitat, then the U. S. Fish and Wildlife Service will complete a tier II biological opinion with a project-specific incidental take.

Forest Management Goals

The Wayne National Forest Plan directs the Forest Service to "manage endangered and threatened plant and animal species to population sizes and distribution where they are no longer threatened, in cooperation with other State and Federal Agencies".

Forest-wide Standards and Guidelines
Resource specialist coordination is required for all proposed oil and gas activities in known locations of federally endangered, threatened, proposed or regional sensitive species or their habitats. Biologist/ecologist/botanist Stipulations, which protect these resource values, will be applied. No activities will be allowed if such activities are shown to be detrimental to any federally threatened, endangered, proposed, or regional sensitive plant or animal species.

III. Species-Specific Conservation Direction and Guidance

The U. S. Fish and Wildlife Service provided non-discretionary Reasonable and Prudent Measures and Terms and Conditions in the BO to minimize incidental take for the Indiana bat and to minimize adverse impacts to the bald eagle. In addition, they provided discretionary Conservation Recommendations for the Indiana bat, bald eagle, and American burying beetle. These non-discretionary and discretionary actions are listed for the appropriate species as either (1) Administrative Requirements; (2) Forest Management Goals; (3) Forest-wide standards and Guidelines; or (4) Conservation Recommendations.

Italicized actions are those that are non-discretionary.

A. Indiana Bat (Myotis sodalis)

Background Information
Several inventories have been conducted on-Forest to assess the presence of Indiana bats. Indiana bats have been captured during some of these surveys, both on the Ironton Ranger District and the Athens Unit. On the Wayne NF, one abandoned mine, specifically a limestone mine, provides a winter hibernaculum for Indiana bats. Numerous mines are located throughout the Forest on each of the ranger districts, however the majority of limestone mines are found in the Ironton Ranger District. Maternity colonies have not been found on the Wayne NF. However, lactating and post-lactating females have been found during summer surveys, which indicate the presence of at least one maternity colony. (Please reference the Biological Assessment if additional background information is required)

Administrative Requirements
Because habitat manipulation acreage is being used to monitor levels of incidental take for the Indiana bat, for each proposed individual project, within the tree removal activities listed below, provide the U. S. Fish and Wildlife Service Reynoldsburg Field Office with a description of the project that includes the location, type of activity, and total acreage to be disturbed by individual project. When reporting the type of activity it must correspond to one of the following management activities:

Activity	*Anticipated level of take of Indiana bat habitat that may occur between 2001-2006 with continued implementation of the Forest Plan*
Hardwood thinning and uneven-aged cuts	*2250 acres*
Pine thinning and uneven-aged cuts	*250 acres*
Timber stand improvements (TSI)	*2500 acres*
Prescribed fire	*2500 acres*
Permanent road construction	*32 acres*
Temporary road construction	*37 acres*
Oil and gas wells road construction	*25 acres*
Trail construction (hiking, horse, ORV)	*160 acres*
Creation of wildlife openings	*352 acres*
Mineral development	*2125 acres*
Special use permits (roads and utility corridors)	*125 acres*
Hazard tree removal	*125 trees*
Closing of underground entrances	*25 acres*

Each project proposal must report how the individual project increases the cumulative forested acres (or number of trees) affected within each of the above management activities and report on the total acreage (or number of trees) remaining in each management activity. The letter requesting the project specific review must include your determinations that the proposed project is consistent with this programmatic biological opinion and incidental take statement and request that the proposed project be tiered to this programmatic biological opinion.

Any individual project that results in the level of incidental take, identified above, to be exceeded would necessitate the reinitiation of formal consultation (BO page 47).

Any dead bats located on the Wayne National Forest, where the species determination is unclear, should be immediately reported to the U. S. Fish and Wildlife Service Reynoldsburg Field Office, and subsequently transported on ice to that office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to U. S. Fish and Wildlife Service Reynoldsburg Field Office. The U. S. Fish and Wildlife Service will make the final species determination on any dead or moribund bats found on the Wayne National Forest. If an Indiana bat is identified, U. S. Fish and Wildlife Service Reynoldsburg Field Office will contact the appropriate U. S. Fish and Wildlife Service Law Enforcement office. (The handling part of this term and condition does not apply to those specific individuals who are permitted, as agents of the State, for conducting work on Federally listed bat species.)

In order for the U. S. Fish and Wildlife Service to be kept informed of actions for minimizing or avoiding adverse effects or benefiting federally listed species or their habitats, the Forest Service will notify the U. S. Fish and Wildlife Service of the implementation of any conservation recommendations.

If, after adhering to the standards and guidelines, it is determined that activities on a project level are likely to adversely affect the Indiana bat, the U. S. Fish and Wildlife Service requests that formal consultation be initiated (BO page 47).

A. Habitat Protection and Improvement

Forest Management Goals

Maintain adequate canopy cover in hardwood stands (depending on the size of the stands) to provide Indiana bat foraging habitat.

Provide roosting habitat by preserving shagbark hickory or shellbark hickory trees.

No snag removal (snags with a dbh>6 inches), except where they pose an imminent threat to human safety.

Maintain a component of large, over-mature trees, in hardwood stands, when possible.

These trees will ensure a continuous supply of large roost trees for the bat.

Tree removal activity will be closely monitored and reported on a project-by-project basis to ensure that impacts of incidental take associated with future proposed projects are appropriately minimized.

Forest-wide Standards and Guidelines

When conducting hardwood timber harvests and completing TSI within hardwood stands, maintain at least 60% canopy cover whenever possible.

Shagbark and shellbark hickory trees shall not be cut during TSI activities, unless the density of the trees of these two species, combined, exceeds 16 trees/acre. If present, at least 16 live shagbark and shellbark hickory (combined) greater than 11 inches dbh must be maintained per acre.

Snags that are potential Indiana bat habitat shall not be removed for TSI purposes. Firewood cutting permits should clearly state that standing dead trees may not be taken.

To maintain a component of large, over-mature trees, at least 3 live trees per acre > 20 inches dbh should be maintained in the stand. The three trees should be any of the preferred species listed below or a combination of the species listed below. (A tree with < 10% live canopy should be considered a snag and would not count towards the three trees to be left). These must be among the largest trees of these species remaining in the stand. An additional 6 live trees per acre > 11 inches dbh (of the species listed below) must also be maintained. (The "per acre" requirement can be expressed as the average per acre on a stand-wide basis, depending on the definition of a stand). If

there are no trees greater than 20 inches dbh to leave standing, 16 live trees per acre must be left, and these must include the largest specimens of the preferred species remaining in the stand.

Shagbark hickory
Shellbark hickory
Bitternut Hickory
Silver maple
Green ash
White ash
Eastern cottonwood
Northern red oak
Post oak
White oak
Slippery elm
American elm
Black locust
Pignut hickory
Red maple
Sugar maple
Black oak

This list of trees is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as identified.

During non-hibernation season, all shagbark and shellbark hickory trees over 6 inches dbh and all live trees, of any species, over 6 inches dbh that are hollow, have major splits, or have broken tops, unless they are a safety hazard. Additionally, a minimum of 12 live trees per acre over 6 inches dbh, of any species, with large areas of loose bark, unless they are a safety hazard. Harvesting of shagbark and shellbark hickory is allowed on the Forest during the Indiana bat hibernating season (after September 15 and before April 15) except as might be restricted by Standards & Guides listed above.

Conservation Recommendations

Create upland waterholes for Indiana bats, as funding allows.

B. <u>Protection of Individuals</u>

Forest Management Goals

Protect all known Indiana bat hibernacula on the Wayne National Forest.

Forest-wide Standards and Guidelines

If additional Indiana bat hibernacula are discovered on the Wayne National Forest, bat-friendly gates shall be installed, as funding allows, to prevent unauthorized entry.

Human access to areas surrounding known hibernacula will be deterred by closing or relocating trails that lead to or pass within easy viewing distance of known hibernacula.

A one-quarter mile of undisturbed forested buffer should be retained surrounding all known hibernacula where the Forest Service has jurisdiction. Undisturbed forested buffer is defined as an area where trail and road construction and tree harvesting activities are prohibited.

Prescribed fires should not occur within one-quarter mile of all known hibernacula on the Wayne National Forest, where the Forest Service has jurisdiction, during the fall swarming and hibernation period of the Indiana bat. When developing prescribed burn plans, ensure that smoke management in the vicinity of known hibernacula will prevent smoke from entering into the known hibernacula.

Before backfilling any mine openings, such as a portal entrance or subsidence depression with a developed opening, a survey for potential bat presence will be required during the fall swarming period. This period usually falls between mid-August to mid-October. The survey is optional if the closure will be accomplished by installing a bat-friendly gate.

Conservation Recommendations

A quarter mile of undisturbed forested buffer should be retained surrounding all openings that are known Indiana bat fall swarming sites, where the Forest Service has jurisdiction. Undisturbed forested buffers should be maintained by reducing or eliminating human disturbances whenever possible.

C. Inventory, Analysis and Monitoring

Conservation Recommendations

Conduct a mist netting and radio telemetry study of Indiana bats on the Marietta Unit of the Wayne National Forest, as funds are available.

In consultation with the U. S. Fish and Wildlife Service, continue to identify and support Indiana bat studies to gain a better understanding of the bat on the Wayne National Forest and throughout the range.

D. Education and Awareness

Conservation Recommendations

In consultation with the U. S. Fish and Wildlife Service and the Ohio Division of Wildlife, conduct training for employees of the Wayne National Forest on bats (including Indiana bat) occurring on the Wayne National Forest. Training should include sections on bat identification, biology, habitat requirements, and sampling techniques (including instructions on applicability and effectiveness of using mist net

surveys vs. Anabat detectors to accurately determine the presence of various bat species). The proper training of Wayne National Forest biologists on bat identification and a reliable methods for counting roosting bats will enable the Wayne National Forest to continue to monitor the status of this species independently of other agencies and research institutions.

B. Bald Eagle (Haliaeetus leucocephalus)

Background Information

Bald eagles have been occasionally sighted on or near the Wayne NF, mostly in the winter along the Ohio River in the Marietta unit, and Burr Oak Reservoir. During summer months, bald eagles are sighted along the Ohio River near the Ironton and Marietta units. No nests have been found in the area. Thus, at this time, bald eagles on the Wayne NF are probably migrating through or wintering here. The bald eagle is expanding its nesting range, however, and has made one known, unsuccessful nesting attempt within a few miles of the Wayne NF. (Please reference the Biological Assessment if additional background information is required)

Administrative Requirements

By June 1 of each year, provide an annual report to the U. S. Fish and Wildlife Service Reynoldsburg Field Office and the Ohio Division of Wildlife, that includes the following information: (1) results of any winter searches for communal bald eagle night roosts and concentrations, including mid-winter bald eagle surveys conducted in cooperation with the U. S. Fish and Wildlife Service and the Ohio Division of Wildlife, and (2) discovery of any bald eagle nesting territories on the Wayne National Forest. If no surveys have been conducted and no nesting territories discovered on the Wayne National Forest during an annual reporting period, an annual report should be submitted with a statement to this effect.

By June 1 of each year, provide an annual report to U. S. Fish and Wildlife Service Reynoldsburg Field Office, that includes any documented case of a prescribed fire that behaved contrary to predicted movement patterns and which resulted in a confirmed adverse impact to bald eagles.

For any prescribed fire that could potentially impact Bald eagles, provide the U. S. Fish and Wildlife Service Reynoldsburg Field Office with the opportunity to review burn plans with the Wayne National Forest Fire Management Officer prior to the burn plan being approved.

In order for the U. S. Fish and Wildlife Service to be kept informed of actions for minimizing or avoiding adverse effects or benefiting federally listed species or their habitats, the Forest Service will notify the U. S. Fish and Wildlife Service of the implementation of any conservation recommendations.

If, after adhering to the standards and guidelines, it is determined that activities on a project level are likely to adversely affect the bald eagle, the U. S. Fish and Wildlife Service requests that formal consultation be initiated (BO page 47).

A. Habitat Protection and Improvement

Forest Management Goals

Reduce the potential of removing unknown communal night roosts.

Discourage continuous and/or repeated human disturbance where wintering bald eagles (November 15 to March 15) are known to have communal night roosts or form daily congregations (as defined in the Northern States Bald Eagle Recovery Plan) on all lands or waters managed by the Wayne National Forest.

Use appropriate smoke management techniques to minimize potential impacts of smoke inversion to occupied communal night roosts, daytime concentrations, or occupied breeding territories.

In association with the predicted removal of this species from the list of endangered and threatened wildlife, assist the U. S. Fish and Wildlife Service and the Ohio Division of Wildlife in monitoring the status of the species on the Wayne National Forest up through the five years following delisting, according to requirements outlined in the Endangered Species Act.

Forest-wide Standards and Guidelines

Protect super-canopy or other identified congregation roost trees along major river corridors, lakes and lands managed by the Wayne National Forest, in addition to adhering to Forest Plan Standards and Guidelines for riparian areas.

B. Protection of Individuals

Forest-wide Standards and Guidelines

Any bald eagle communal night roosts and concentrations (including nests) discovered during winter surveys or during any additional field surveys of proposed project areas, shall be protected following guidelines outlined in the Northern States Bald Eagle Recovery Plan.

Any bald eagle nests discovered on Wayne National Forest lands shall be immediately reported to the U. S. Fish and Wildlife Service and to the Ohio Department of Natural Resources, Division of Wildlife.

Consider all bald eagle communal night roosts, daytime concentration sites, or breeding sites (if and when discovered on the Wayne National Forest) as occupied bald eagle sites.

Prescribed fires should not be conducted within ½ mile of occupied bald eagle sites.

In order to prevent smoke inversion from occurring at all occupied bald eagle sites, any planned prescribed fire should be conducted (in areas outside the ½ mile radius of occupied sites) only when the following have been considered: wind direction, speed,

mixing height and transport winds needed in burn planning and implementation, to minimize smoke from drifting toward and occupied sites.

C. Inventory, Analysis and Monitoring

Forest-wide Standards and Guidelines

Should the bald eagle be found on the Wayne National Forest, populations should be monitored and managed as directed by the biological opinion and the species delisting monitoring plan for a period of five years.

Conduct a minimum of three annual winter (early, middle, and late) searches, as funds are available, (aerial and/or ground) to locate any previously unknown communal night roosts or eagle concentrations on areas of the Wayne National forest where actions are being planned that may affect the species following criteria outlined in the Northern States Bald Eagle Recovery Plan. Searches will focus on areas eagles are known to frequent, where congregations of eagles have been previously documented, or where there are concentrated food sources near lands or waters managed by the Wayne National Forest.

D. Education and Awareness

Conservation Recommendations

Provide field training for new Wayne National Forest employees so they will be able to recognize bald eagle signs at night roosts, even when eagles are absent.

C. American Burying Beetle (Nicrophorus americanus)

Background Information

Athens, Hocking, and Vinton counties have current, recent (within 25 years) known or possible occurrences of the American burying beetle. The beetle has been reintroduced to Athens County. The last known naturally occurring collection was a single beetle near Old Man's Cave in Hocking County in 1974. The species was reintroduced in 1998 in an area in Athens County, Ohio within a few miles of the Wayne NF in the Waterloo Wildlife Research Station. This reintroduction was successful in that a follow-up trapping found 2 newly emerged individuals (one male and one female). On June 9, 1999, 20 pairs and 16 single females were released in a recently mowed field near bordering woods at the same location as the 1998 reintroduction and also at one-half mile distances from that location. Within 2 weeks, approximately 66 larvae were found. There was a 2000 release of 36 pairs of beetles. A single large male was captured on October 3, 2000. The populations will be monitored annually for the foreseeable future. There will possibly be other releases to other areas in the future. There are no known populations of American burying beetle within the proclamation boundaries of the Wayne NF. (Please reference the Biological Assessment if additional background information is required)

Administrative Direction and Requirements
In order for the U. S. Fish and Wildlife Service to be kept informed of actions for minimizing or avoiding adverse effects or benefiting federally listed species or their habitats, the Forest Service will notify the U. S. Fish and Wildlife Service of the implementation of any conservation recommendations.

A. Habitat Protection and Improvement
Conservation Recommendations

New road construction, within 10 air miles of known occupied American burying beetle habitat, could be planned in such a way as to involve the least amount of ground disturbance, measured in terms of the area compacted to the point it is no longer American burying beetle habitat, and designed with the minimum safe width necessary for planned use of the road.

The U. S. Fish and Wildlife Service recommends that ground disturbance during the reconstruction and maintenance of existing roads be kept to a minimum within 10 air miles of known occupied American burying beetle habitat. Width of road, ditches, and surface materials could be the minimum necessary to allow safe movement of all permitted vehicular traffic.

To limit American burying beetle habitat loss, the U. S. Fish and Wildlife Service recommends that improved areas, such as campgrounds, recreation area, and trails, should be planned for and constructed outside areas with known American Burying beetle populations.

The U. S. Fish and Wildlife Service recommends that wildlife and forestry management practices for the Wayne National Forest continue to incorporate the principals of forest ecosystem management and that management for the American burying beetle be included among the high priority species and goals of the Wayne National Forest. Forestry management should implement activities, which benefit the American burying beetle, when this is compatible with the overall productivity and vitality of the Wayne National Forest.

B. <u>Protection of Individuals</u>

Conservation Recommendations

Because of the sensitivity of most insects to chemical applications, the U. S. Fish and Wildlife Service recommends that the use of pesticides could be restricted within the known range of the American burying beetle on the Wayne National Forest. Restriction could be in the method of application, the location, and the type of pesticide or herbicide used.

C. <u>Inventory, Analysis and Monitoring</u>

Conservation Recommendations

Develop and carry out a monitoring strategy to evaluate the reintroduction of the American burying beetle, as funding allows. The monitoring strategy should follow approved American burying beetle monitoring guidelines, and focus of the monitoring should be within 10 air miles of the release site where the Forest Service has jurisdiction.

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(USFWS 1991a) U. S. Fish and Wildlife Service, Southeast Region. July 9, 1991. Recovery Plan for Fanshell (Cyprogenia stegaria (=C. irrorata)).

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(USFWS 1992b) U. S. Fish and Wildlife Service, New England Field Office, Newton Corner, MA. 1992. Virginia Spiraea (Spiraea virginiana Britton) Recovery Plan. 47 pp.

(USFWS 1999) U. S. Fish and Wildlife Service. March 1999. Indiana bat (Myotis sodalis) revised Recovery Plan. Agency Draft.

(USFWS 2001a) U. S. Fish and Wildlife Service memo to the Forest Service regarding Federally listed species in vicinity of Wayne National Forest.

(USFWS 2001b) U. S. Fish and Wildlife Service. September 20, 2001. Biological Opinion for the Land and Resource Management Plan, Wayne National Forest, Ohio. 52 pp.

(USFWS 2002). U. S. Fish and Wildlife Service County Distribution List for Federally Listed and Candidate Species, Ohio.

Appendix D
The Significance of this Amendment

The term "significant" as it pertains to a forest plan amendment is not the same as "significant" in the context of addressing environmental effects in a National Environmental Policy Act (NEPA) analysis (as might be found in the language of an environmental assessment). "Significant" as it pertains to a Forest Plan amendment gauges the impact of a proposed change to a forest plan. To meet the definition of significant, an amendment must meet both of the following criteria found in Forest Service Manual (FSM) 1922.5:

(1) It must substantially alter the long-term relationship between the outputs of multiple-use goods and services (i.e., wildlife habitat, recreational opportunities, timber products) originally projected; and

(2) It must have an important effect on the entire Forest Plan or affect the land and resources throughout a large portion of the planning area during the planning period.

This amendment does not meet the criteria for significance in items (1) and (2) above:

(1) The long-term relationship between the outputs of multiple-use goods and services projected in the Forest Plan with its 12 existing amendments will not be substantially altered. The proposed amendment does indicate some limits on activities in terms of acres that can be affected in the next 5 years. The acres in this listing of limits was developed by Wayne National Forest specialists in the Biological Assessment and approved by the US Fish and Wildlife Service in their Biological Opinion; therefore the proposed amendment will not affect the projected outputs in the short-term (the next 5 years). Since the Biological Opinion only covers a 5 year period, the Forest Plan will have to be reexamined in that time for any further actions, so the proposed amendment does not affect the long-term relationship between output of multiple-use goods and services.

(2) While the amendment is important, its effects are primarily limited to the threatened and endangered species addressed; the actual effect on the entire Forest Plan is minimal. Although there would be minor effects across the Wayne National Forest, they will mostly occur on less than 5% of the Forest (the area of expected disturbance over the next 5 years as listed in the BA and shown in the BO on pages 38 &39.)

Forest Service Manual 1922.5 defines that non-significant amendments can result from:

(a) Activities that do not significantly alter the multiple-use goals and objectives in the long term.

(b) Adjustments to management area boundaries and prescriptions based on further on-site analysis.

(c) Minor changes to standards and guides.

(d) Incorporating opportunities for additional management practices that will contribute to achievement of management prescriptions.

This amendment does meet the criteria for a non-significant amendment listed in (a), (c) and (d) above in the following ways:

(a) The multiple-use goals and objectives are not altered in the long-term. The multiple-use goals as stated on pages 4-1 through 4-4 of the Forest Plan are not altered in any way.
(b) The proposed amendment would not change any management area boundaries.
(c) The proposed amendment does propose several minor changes to standards and guides. These are minor changes for two reasons. First, the changes will not substantially alter the outputs as stated in the Forest Plan. The second reason is that they will not substantially change how the Forest is currently being managed by implementing other standards and guides now in place, as shown in the examples below:
   - For instance, a proposed standard and guideline would protect super-canopy trees along major rivers and lakes. However, existing standards and guidelines for riparian corridors already provide protection for this habitat. Therefore, this change is minor.
   - In another example, the proposed standard and guideline requiring snags be left during TSI activities just adds additional definition to the existing Forest Plan standard and guideline requiring snags be left for wildlife purposes.
   - As another example, two proposed standard and guidelines talk about protection of shagbark and shellbark hickory. A current Forest Plan standard and guideline deals with leaving hickory in clearcuts. The proposed standard and guideline would clarify the already existing Forest Plan protection of hickory during timber harvesting operations.
   - In one final example, a proposed standard and guide would require that a number of trees, of a specific size class, and of stated species be left per acre for Indiana bat habitat. An existing Forest Plan standard and guideline deals with leaving "live den trees" for wildlife in cutting units. The proposed standard and guideline adds further definition to specific species and sizes of trees to be left, but is not a new concept to the Forest Plan.

(d) The proposed amendment would contribute to the Forest Plan goal of "Manage endangered and threatened plant and animal species to population sizes and distribution where they are no longer threatened, in cooperation with other state and Federal Agencies." (Forest Plan, p. 4-2). The proposed amendment would also contribute to the existing Forest Plan Forest-wide Standard and Guideline "Should new information indicate the presence of a federally-listed or proposed species within the Forest, consultation will be initiated with the U.S. Fish and Wildlife Service to develop species management plans and standards, as necessary to protect and, as possible, enhance habitat of such species." (Forest Plan, p. 4-44).

In addition to the Forest Service Manual direction, the Forest Service Handbook 1909.12 also includes direction related to determining whether or not a proposed amendment is a significant change to the Forest Plan.

FSH 1909.12 Section 5.32 - Process to Amend the Forest Plan.

"The following actions must be taken when a proposal is not consistent with the forest plan and the proposal is to be considered further for implementation.

1. Prepare a proposed amendment to the forest plan.

2. Make a determination of the significance of the change to the forest plan under 16 U.S.C. 1604(f)(4), 36 CFR 219.10(f), and FSM 1922.5. It is important to distinguish between significance of the change to a forest plan and significance of the environmental impacts of the proposed action as defined by Council on Environmental Quality regulations found at 40 CFR 1500 to 1508.

3. The following factors are to be used when determining whether a proposed change to a forest plan is significant or not significant, based on NFMA planning requirements. Other factors may also be considered, depending on the circumstances.

"a. Timing. Identify when the change is to take place. Determine whether the change is necessary during or after the plan period (the first decade) or whether the change is to take place after the next scheduled revision of the forest plan. In most cases, the later the change, the less likely it is to be significant for the current forest plan. If the change is to take place outside the plan period, forest plan amendment is not required."

The Land and Resource Management Plan for the Wayne National Forest (Forest Plan) was orginally approved on Jaunuary 3, 1988. The Forest Plan has been amended twelve (12) times since its orignial approval. The Forest Plan, as amended, has been in place longer than "the plan period (the first decade)" mentioned in the paragraph above. The Fiscal Year 2002 Appropriations Bill for the Department of Interior and Related Agencies (including the Forest Service) includes direction to continue to implement forest plans until they are revised even if they exceed the 15 year timeframe specified in NFMA. The currently proposed amendment on Threatened and Endangered Species is scheduled to be completed and implemented by the end of calendar year 2002. The proposed amendment would continue to be implemented until the Forest Plan is revised, or is amended to change the direction that would be added in the currently proposed amendment, or when the 5-year timeframe covered by the BO expires. The Wayne National Forest began revision of the Forest Plan in fiscal year 2002. The Forest Plan revision is scheduled to take approximately 4 years (completed by the end of fiscal year 2005). The BO was signed in September 2001, covers 5 years and would expire in September 2006.

"b. Location and Size. Determine the location and size of the area involved in the change. Define the relationship of the affected area to the overall planning area. In most cases, the smaller the area affected, the less likely the change is to be a significant change in the forest plan."

The Wayne Forest Plan covered the entire area of the Wayne National Forest. At the time the Forest Plan was approved in 1988, the Forest Plan listed the Forest as covering 176,787 acres. The Forest has acquired land since 1988 and currently (as of 3/31/2002) covers apporximately 233,000 acres. The currently proposed Forest Plan amendment would cover the entire area currently under the management of

the Wayne National Forest (approx. 233,000 acres) and would apply to any new acreage that the Forest acquires during the the 5-year life of the BO.

"c. Goals, Objectives, and Outputs. Determine whether the change alters long-term relationships between the levels of goods and services projected by the forest plan. Consider whether an increase in one type of output would trigger an increase or decrease in another. Determine whether there is a demand for goods or services not discussed in the forest plan. In most cases, changes in outputs are not likely to be a significant change in the forest plan unless the change would forego the opportunity to achieve an output in later years."

Forest Plan Goals, Objectives and output are listed on pages 4-1 through 4-6 of the Forest Plan. The proposed amendment would not change any of these Goals, Objectives and Outputs of the Forest Plan as it currently exists with 12 completed amendments. As the Chief of the Forest Service determined in his 9/10/84 appeal decision for the San Juan and Grand Mesa, Uncompahgre and Gunnison National Forest plans (CITE), there is no assurance that projected Forest outputs will occur due to limitations of modeling, changes in law and regulations, changes in economic conditions, changes in budgets, site-specific conditions and other situations.

"d. Management Prescription. Determine whether the change in a management prescription is only for a specific situation or whether it would apply to future decisions throughout the planning area. Determine whether or not the change alters the desired future condition of the land and resources or the anticipated goods and services to be produced."

The proposed amendment would apply to future decisions thoughout the planning area until September 2006. The proposed amendment would not change or alter the existing management area designations, the desired future condition of the Forest, or the anticipated goods and services to be produced.

Appendix E
Management Indicator Species Effects Analysis

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November 24, 2002

The USDA Forest Service is mandated under Code of Federal Regulations (CFR) 200.3(b) (2) "to administer and manage lands…in accordance with …the National Forest Management Act (NFMA)". The NFMA does not mention Management Indicator Species (MIS) or monitoring wildlife populations. Direction for MIS is located in 36 CFR 219.19, which establishes the basis for managing and maintaining viable populations of existing native and desired non-native vertebrate species. It states that for planning purposes a viable population shall be regarded as one, which has the estimated numbers, and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. Specifically, 36 CFR 219.19(a)(6) states "population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies to the extent practicable".

The USDA Forest Service Manual (FSM) provides further direction on MIS both in the Wildlife, Fish, and Sensitive Plant Habitat Management directives (FSM 2600) and the Planning Directives (FSM 1900). MIS are defined as "plant and animal species, communities, or special habitats selected for emphasis in planning in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (FSM 2600). The FSM further states that species selected will be those "that best represent the issues, concerns, and opportunities to support the recovery of Federally-listed species, provide continued viability of sensitive species, and enhance management of wildlife and fish for commercial, recreational, scientific, subsistence, or aesthetic values or uses" (FSM 2600).

The Wayne National Forest Land and Resource Management Plan integrates MIS into its planning process consistent with USDA Forest Service Manual direction under Resource Integration Requirements (FSM 1900: 1922.15 items 10 and 11). The FSM states "10. Ensure that the set of management indicator species includes Resources Planning Act (RPA) and regional wildlife and fish indicators and represents all significant forest level wildlife and fish diversity and resource production issues, concerns, and opportunities.", and "11. Ensure that management prescriptions will provide for the habitat capability to meet demand for management indicator species and provide access for recreational and commercial uses with minimal disturbance to species use of suitable habitats".

The manual further requires that plans "Ensure the plan provides for the kinds, amounts, and distribution of habitat needed for the recovery of threatened and endangered species and needed to maintain viable, well-distributed populations of all existing native and desired non-native species" (FSM 1900).

Analysis of project level effects is used to determine an activity's contribution to meeting forest-wide objectives for providing for well-distributed, viable populations. Management activity effects are examined in light of the existing habitat conditions both within and outside the Forest, and documented population conditions and trends.

Project Description
A detailed account of the project description, purpose, and need for the amendment is found in the Environmental Assessment (EA) for this project. In summary, new information in the form of FWS-issued Reasonable and Prudent Measures and Terms and Conditions for the Indiana bat and bald eagle needs to be incorporated into management direction supplied by the Forest Plan.

A total of three alternatives were developed as a result of issues raised during the scoping process, as required by the National Environmental Policy Act (NEPA).

Alternative A (Proposed Action) – Required Level of Protection
The proposed action would amend the Forest Plan to incorporate all of the non-discretionary Reasonable and Prudent Measures and Terms and Conditions, contained in the BO prepared by the U. S. Fish and Wildlife Service, as Forest Management Goals and Forest-wide Standards and Guidelines in the Forest Plan. This is the level of protection required by the BO. In addition, existing Forest Plan direction and standards and guidelines that conflict with the Reasonable and Prudent Measures and Terms and Conditions from the BO would be revised or deleted as appropriate.

Alternative B (No Action)
The Forest Plan would not be amended at this time. The Reasonable and Prudent Measures and Terms and Conditions would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

Alternative C – Enhanced Level of Protection and Plan Consistency
This alternative would provide more protection than the minimum required by the BO. All of the non-discretionary Reasonable and Prudent Measures (Forest Management Goals) and Terms and Conditions (Forest-wide Standards and Guidelines) contained in the Biological Opinion (BO) would be incorporated into the Forest Plan. This alternative would incorporate new information about preferred tree species in Indiana Bat Term and Condition #4 (as a Forest-wide Standard and Guideline), and would incorporate the BO's discretionary Conservation Recommendations as part of the Wayne National Forest's Conservation Plan to protect and conserve Federally listed species (as Forest Plan Appendix J). In addition, current Forest Plan direction that conflicts with the BO's non-discretionary Reasonable and Prudent Measures and Terms and Conditions and discretionary Conservation Recommendations would be revised or deleted, as appropriate.

This project is programmatic in nature and when available, utilizes general trends in population changes. The Forest Service and other cooperating agencies and organizations have conducted some inventories of appropriate habitats for these species. Establishing trend data requires

long-term monitoring; therefore this data is becoming available for some species but is limited for others.

Wayne National Forest Management Indicator Species
The following list displays the Wayne National Forest Management Indicator Species, along with a brief description of the habitat components the MIS represent. Background information about how these MIS were selected is displayed in Appendix B of the Forest Plan.

MIS Species	Habitat
Cerulean warbler	Close-Canopied, Mature/Over-Mature Hardwoods
Pileated woodpecker	Mature Hardwoods
White-eyed vireo	Late Succession
Common yellowthroat	Middle Succession
Field sparrow	Early Succession
Pine warbler	Conifers
Ruffed grouse	Early Hardwoods
Eastern bluebird	Park Like
Wood duck	Beaver Ponds, Oxbows
Virginia rail	Marsh
Western chorus frog	Fishless Ponds In Fields
Wood frog	Vernal Ponds in Hardwoods
Bluegill	Artificial Impoundments
Southern Redbelly Dace	Small/Intermittent Streams
Redfin Shiner	Medium Streams with Sand/Gravel Pools
Blackside Darter	Medium Streams with Silt Pools
Rainbow Darter	Medium Streams with Riffles
Golden Redhorse	Large Streams with Pools
Sand Shiner	Large Streams with Sand Pools
Banded Darter	Large Streams with Riffles

Summary of Effects
Alternatives A and B had the same effects to the MIS, even though Alternative B was the no action alternative. For the no action alternative, the Forest Plan would not be amended at this time, but that the Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) would be incorporated into the Forest Plan revision, which is to be completed in 2005. In the meantime, it is understood that WNF biologists will incorporate, as appropriate, the Reasonable and Prudent Measures and Terms and Conditions on a project-by-project basis.

An analysis of effects determined the direct, indirect and cumulative effects of the alternatives on the MIS. The results of this analysis are summarized in Table 1 (near the end of this document). The results of the effects analysis show that the alternatives would have either no impact or a beneficial effect on 16 of the 20 MIS. Four of the MIS could be adversely affected, to some degree, by the alternatives. These species included the ruffed grouse, white-eyed vireo, yellowthroated chat, and field sparrow. These species represent those animals that require early successional habitat. Early successional habitat ranges from herbaceous vegetation found in old pastures to old fields with shrub-scrub components to second growth deciduous woods with dense understories, shrubs, vines, and other tangles. Specific Indiana bat Reasonable and Prudent Measures, Terms and Conditions, or Conservation Recommendations could limit the amount of early successional habitat created on the Wayne National Forest through timber harvesting.

- Indiana bat RPM 1 requires adequate canopy be retained for Indiana bat foraging.
- Indiana bat RPM 4 directs the Forest Service to maintain a component of large, overmature trees in hardwood stands.
- Indiana bat RPM 6 requires all Indiana bat hibernacula receive protection.
- Indiana bat TC 1 requires at least 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands.
- Indiana bat TC 4 provides guidance on how to maintain a component of large, overmature trees in forest stands by listing specific tree size classes and species that should be retained in hardwood stands.
- Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula.
- Indiana bat CR 5 encourages one-quarter mile of undisturbed forested buffer around known Indiana bat fall swarming sites.

An in-depth analysis of the direct, indirect, and cumulative effects is contained in the next section of this MIS effects analysis.

Effects Analysis
The following provides a description of the species habitat association, along with other general habits. Predictions as to the direct, indirect, and cumulative effects on each MIS, as a result of implementing any of the alternatives, have been provided.

Cerulean warbler (*Dendroica cerulea*) – This bird is associated with mature deciduous woodlands. Eastern Ohio is in the core area of this species breeding range. In southeast Ohio, breeding pairs occupy extensive mixed mesophytic forests and floodplain woods. Nests are placed 30-60 feet high among the outer branches of tall trees. This species is also on the Wayne National Forest's Regional Forester Sensitive Species list. Cerulean warblers were reported in 50.7% of block data during the statewide Breeding Bird Survey and 48.6% of these were in the unglaciated plateau. Trend analysis on state data shows that the Ohio population of the cerulean warbler has not shown a significant overall trend of change and detections have remained even and constant for a thirty year period from 1965 to 1995 (Earnst and Andres 1996). Breeding Bird Surveys conducted on the Wayne National Forest from 1992-1994 recorded cerulean warblers at all thirty transects. Transects were placed in interior hardwood forests. Ceruleans are known to occur throughout all units on the Wayne National Forest.

Under Alternative A, the cerulean warbler may be affected by the addition of some Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs). There may be a beneficial effect to the warbler with the addition of Indiana bat RPMs 1-4. These RPMs address the goals of forest stand structure. The cerulean is generally a bird of closed canopy, mature forests. These RPMs call for the maintenance canopy cover in hardwood stands, and the protection of specific tree types. Furthermore, Indiana bat TC 1 requires that at least 60% canopy cover be maintained during hardwood timber harvests and TSI activities. Indiana bat TC 4 and 5 maintain a component of large, overmature trees in forest stands. Ceruleans will nest in the canopies of tall trees; perhaps some of the large, overmature trees would serve as potential nesting habitat. Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. Bald eagle TC 5 may have beneficial effects to the cerulean warbler in that super-canopy trees are protected.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the cerulean warbler would be similar as those described for Alternative A.

Under Alternative C, the effects to the cerulean warbler would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat CR 4 and 5 may have beneficial effects to the cerulean. The creation of upland waterholes would provide a source of water for the cerulean warbler. Indiana bat CR 5 recommends that a quarter mile of undisturbed forested buffer be retained around known Indiana bat fall swarming sites. This CR could protect potential habitat for this species. Bald eagle and American burying beetle Conservation Recommendations should have no effect on this species.

There are indications that there are population declines occurring to this species within its range. No adverse effects to the cerulean warbler or its suitable habitat could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Pine warbler (*Dendroica pinus*) – This bird is restricted to woodlands dominated by pines. In Ohio, they prefer mixed woods with a pine canopy and an understory of various deciduous species. However, they may nest in pure pine plantations. They occupy mature forests and second growth woods with scattered large pines, and are equally likely to be found within the interiors and along the edges of these habitats. Most pairs are found in large wooded tracts but may also inhabit isolated woodlots. Nests are normally placed 20-50 feet high among the outer branches of tall pines. Breeding Bird Surveys conducted on the Wayne National Forest from 1992-1994 recorded very few pine warbler occurrences. However, transects were placed in interior hardwood forests. Out of the thirty transects pine warblers were detected at five and three of the five were on the Ironton unit. No pine warblers were detected on the Athens Unit.

Alternative A should have no effect on this species. The pine warbler is a bird associated with coniferous forest cover. The Reasonable and Prudent Measures and Terms and Conditions do not address this type of habitat or its management. Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A. Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). The Conservation Recommendations should have no effect on this species or its habitat. No adverse effects to this species or its suitable habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Pileated woodpecker (*Dryocopus pileatus*) – This bird prefers extensive tracts of mature forests, but may also be found in scattered woodlots and along wooded riparian corridors. Nests are most frequently located in cavities 25-50 feet high in large dead deciduous trees. Breeding Bird Surveys in the state show that this bird has increased significantly at 2.4% annually and are much more common in the eastern part of the state (Earnst and Andres 1996). Pileated woodpeckers were reported in 54.8% of block data during the statewide Breeding Bird Survey and 48.0% of these were in the unglaciated plateau (Peterjohn and Rice 1991). Breeding Bird Surveys conducted on the Wayne National Forest from 1992-1994 recorded pileated woodpeckers at all thirty transects. Transects were placed in interior hardwood forests.

Under Alternative A, the pileated woodpecker may be affected by the addition of some Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TC). There may be a beneficial effect to the pileated woodpecker with the addition of Indiana bat RPMs 1-4. These RPMs address the goals of forest stand structure. These RPMs call for the maintenance of canopy cover in hardwood stands, and the protection of specific tree types, including those that could serve as cavity trees. Furthermore, Indiana bat TC 1 requires that at least 60% canopy

cover be maintained during hardwood timber harvests and TSI activities. Indiana bat TC 4 and 5 maintain a component of large, overmature trees in forest stands. Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. Bald eagle TC 5 may have beneficial effects to the pileated woodpecker in that super-canopy trees are protected. These tend to occur in riparian areas and bottomlands. These trees and stand structure components can be considered potential habitat for the bird now and in the future.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the pileated woodpecker would be similar as those described for Alternative A.

Under Alternative C, the effects to the pileated woodpecker would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan as Forest Plan Appendix J. Indiana bat CR 4 and 5 may have beneficial effects to the pileated woodpecker. The creation of upland waterholes would provide a source of water for this species. Indiana bat CR 5 recommends that a quarter mile of undisturbed forested buffer be retained around known Indiana bat fall swarming sites. This CR could protect potential habitat for this species. Bald eagle and American burying beetle Conservation Recommendations should have no effect on the species.

No adverse effects to the pileated woodpecker or its suitable habitat could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Ruffed grouse (*Bonasa umbellus*) – This bird prefers second growth deciduous woods where dense understories, shrubs, vines, and other tangles provide suitable cover. They prefer extensive tracts but may also occupy isolated woodlots. Nests are placed on the ground, usually near woodland edges and clearings. The ruffed grouse occurs in 40 eastern Ohio counties, almost exclusively in southeastern and northeastern Ohio. During the Ohio Breeding Bird Survey approximately 73.5% of breeding bird data blocks detecting the ruffed grouse occurred in the unglaciated plateau (Peterjohn and Rice 1991). Ruffed grouse numbers are cyclic in nature, which seem to be independent of habitat changes and hunting pressures (Peterjohn 1989). In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the National Forest. Twenty-four detections of ruffed grouse were made in 11 of these stands. Detections were made on all three units. The ruffed grouse was also detected during interior forest bird surveys in 7 of the thirty transects. The Ohio Division of Wildlife (ODOW) has been conducting Drumming Count Surveys since 1973. The long-term average of these counts is 20 drumming males heard/100 stops (Dave Swanson, personal communication with Lynda Andrews). Drumming counts for 2002 showed a decrease of 9% from 2001; the index was 48% below the long-term average (ODOW 2002). Other ODOW population monitoring surveys show similar population trend declines. The Squirrel Hunter Grouse Index (number of grouse observed per 1000 hours of squirrel hunting) showed an 83% decrease in grouse flushed compared to 2001. The Grouse Hunter Cooperator results

(cooperators who maintain a grouse hunting diary) showed hunters averaged 0.95 flushes per hour in 2001-2002, a figure that was 2% lower than the previous year. The 2001-2002 flushes per hour figure was 17% below the long-term average.

Some of the Indiana bat Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) could have an effect on the ruffed grouse. The RPMs 1, 4, and 6 provide direction to maintain adequate canopy cover for the Indiana bat and protect known hibernacula. Similarly, Indiana bat TC 1 requires that 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands. Indiana bat TC 4 maintains a component of large, overmature trees in forest stands. Grouse require forested habitat, but do need components of early successional woods (brushy) as described above. Group selection cuts (a harvest technique) are allowed by the BO as a tool to create small-sized patches of early successional habitat. Canopy cover requirements would limit the amount of brushy habitat that would be developed through harvests with the RPMs and TCs applied. Indiana bat TC 8 requires one-quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. No early successional habitat would be created in those areas in the future, unless a natural disturbance occurred. At this time, only a single hibernaculum is present on the Forest. No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the ruffed grouse.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the ruffed grouse would be similar as those described for Alternative A.

Under Alternative C, the effects to the ruffed grouse would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. Indiana bat Conservation Recommendation 4 would benefit the grouse. This measure encourages upland waterhole construction to occur for the Indiana bat, which would in turn provide a drinking water source for the grouse. Indiana bat CR 5 would have the same effect on the grouse, as would Indiana bat TC 8, described above. Bald eagle and American burying beetle CRs should have no effect on this species.

As mentioned above, specific Indiana bat Reasonable and Prudent Measures and Terms and Conditions may have cumulative effects on the grouse because the amount of suitable ruffed grouse habitat created on the Wayne using even-age timber harvesting methods will be limited in the foreseeable future. However, early successional habitat will likely be acquired through the lands acquisition program, and the maintenance of early successional habitat would continue through the Wayne's permanent forest openings program. In the 2002-2003 Wildlife Population Status and Hunting Forecast (ODOW 2002), a description of habitat and population change is provided for the ruffed grouse. In summary, the grouse has been a resident species in Ohio since the ice age. Prior to pre-European settlement forest cover and grouse populations covered about 95% of Ohio, but by 1940 only 12% of Ohio was covered by forest. By 1908, the grouse had declined in abundance in eastern Ohio and was absent from western Ohio. Between the 1930's and 1950's, and again in the early 1970's, farms in eastern Ohio were abandoned and these areas converted to brushy habitat and forest cover. Grouse abundance increased because of this.

Grouse populations fluctuate and are cyclic in nature, however from 1983 to the present grouse abundance has been consistently low and averaged well below the long-term mean. The ODOW states that this decline is thought to be a result of a decline in quality brushy or early successional habitat. For example, Forest Service inventories show a 50% decline in the seedling/sapling (brush) forest size class from 1968-1991 (ODOW 2002). Hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate grouse habitat, and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including those required by the ruffed grouse. The ODOW (2002) reported that timber growth exceeds harvest in Ohio's grouse range, and that the timber harvesting that does occur has been insufficient to halt the successional trend away from quality grouse habitat and toward more mature forests, something that appears to be occurring on a regional level in neighboring states.

White-eyed vireo (*Vireo griseus*) – This bird represents species that prefer the late-phase of early successional habitats. It inhabits shrubby habitats such as deciduous scrub, old fields, abandoned pastures, regenerating clearcuts or other heavily logged areas, drainage and streamside thickets, forest edges, and reclaimed strip mines. Nests are usually placed six feet high or less in dense bushes. White-eyed vireos were reported in 66.4% of block data during the statewide Breeding Bird Survey and 41.5% of these were in the unglaciated plateau. Trend analysis on state data for the years of 1965 thru 1995 show a rise in the average number of individuals detected per route. More birds per route are detected in the southeastern unglaciated plateau than the rest of the state (Earnst and Andres 1996). In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the Wayne National Forest. Eighty-five detections of White-eyed vireos were made in 21 of these stands. The majority of detections were made on the Ironton Unit.

Alternative A should have similar effects to this species as displayed for the ruffed grouse. The white-eyed vireo utilizes successional forest habitats with a shrubby component. The Reasonable and Prudent Measures 1, 4, and 6 provide direction to maintain adequate canopy cover for the Indiana bat and protect known hibernacula. Similarly, Indiana bat Term and Condition 1 requires that 60% canopy cover be maintained when conducting hardwood timber harvests and TSI activities in hardwood stands. This percentage of canopy cover may not open the stands enough to allow the shrub component to fully develop. Indiana bat Term and Condition 4 and 5 maintain a component of large, overmature trees in forest stands. Indiana bat Term and Condition 8 requires one quarter mile of undisturbed forested buffer around known Indiana bat hibernacula. This would equate to an area of undisturbed forest one-half mile in width. These may have a negative effect on the white-eyed vireo since no early-late successional habitat would be present in those areas in the future. No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the white-eyed vireo.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). This alternative should have the same effects on the white-eyed vireo as that displayed for the ruffed grouse. Indiana bat Conservation Recommendation 5 would encourage the Forest Service to avoid disturbance one-quarter mile from known Indiana bat fall swarming sites. This could limit the amount of successional forest habitat that could be created in these areas. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have cumulative adverse effects on the amount of white-eyed vireo suitable habitat that may be created in the future on the WNF through timber harvesting. The description of forest habitat change displayed for the ruffed grouse shows how early successional (early-late phases) has changed over time in Ohio. Hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, early successional habitat (early-late phases) continues to occur through abandonment of farmlands, including those farms acquired by the Forest Service. It is also maintained through the Forest opening program. It is likely the Forest Service would continue to acquire some old farmlands from willing-sellers in the future, and the Forest opening program would continue in the future. Therefore some white-eyed vireo suitable habitat could be maintained in this manner. Because of this, only slight adverse cumulative effects are expected for species requiring late-phase early successional habitat.

Common yellowthroat (*Geothlypis trichas*) – This bird represents the middle succession species. It inhabits dense herbaceous vegetation with scattered brushy thickets and small saplings in damp or wet locations. Most breeding pairs inhabit old fields, corridors along fencerows and streams, woodland edges and openings, and the margins of ponds and marshes. Nests are either on the ground under dense herbaceous cover, or at heights of less than one foot attached to shrubs and clumps of grasses. Common yellowthroats are abundant in the state with 99.9% of the Ohio Breeding Bird Survey blocks reporting detection of the species. The unglaciated plateau was the second most abundant region in the state (27.8%) reporting this species (Peterson and Rice 1991). During survey efforts within earlier successional habitat (as described in the white-eyed vireo section) only 5 of 39 sampled areas had common yellowthroats detected with all but one discovery being on the Ironton unit. This low number may be due to the limited amount of available aquatic habitat located within them. Earnst and Andres (1996) report the common yellowthroat as being more than twice as common in eastern Ohio than the western part of the state.

Alternative A should not affect this management indicator species, however it could limit the creation of middle-successional habitat for species it represents. The common yellowthroat is a bird associated with open land habitat in damp or wet locations. It uses brushy, shrubby areas common in old fields, forest wildlife openings, and along forest edges. While timber harvesting can create this type of habitat, harvesting of forest stands on the WNF in damp or wet areas

follows riparian Forest Plan standards and guidelines, which generally focus on maintaining or enhancing forest cover in these damp areas. Other species, represented by the common yellowthroat, use middle successional habitats not located in damp areas. Therefore Alternative A could have an effect on long-term creation of middle successional habitat through timber harvesting limitations (see effects for ruffed grouse and white-eyed vireo). However, this habitat is also created through an ongoing Forest opening program and through acquisition of abandoned farmlands. No bald eagle Reasonable and Prudent Measures and Terms and Conditions would affect this species.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). This alternative should have the same effects on the common yellowthroat as that displayed for Alternative A. Indiana bat Conservation Recommendation 5 would encourage the Forest Service to avoid disturbance one-quarter mile from known Indiana bat fall swarming sites. This could limit the amount of successional forest habitat that could be created in these areas. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have slight cumulative adverse effects on the amount of mid-successional habitat that may be created in the future on the WNF through timber harvesting. As stated for the ruffed grouse and the white-eyed vireo, hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, the majority of early successional habitat (middle successional phases) continues to be created and maintained through the Forest openings program and through abandonment of farmlands, including those farms acquired by the Forest Service. Acquisitions of abandoned farmland may occur in the future, and the Forest opening program would continue in the future. Therefore some middle successional habitat could be maintained on the WNF through this avenue. Because of this, only slight adverse cumulative effects are expected for species requiring middle successional habitat.

Field sparrow (*Spizella pusilla*) – This bird occupies a wide variety of brushy successional habitats, such as old fields and cutover hillsides where herbaceous vegetation is interspersed with brushy tangles and scattered small saplings. They inhabit brushy pastures, woodland edges and openings with shrubby undergrowth, and narrow brushy corridors along fencerows, roadsides, railroads, and streams adjacent to open fields. Nests are generally placed 1-3 feet high in shrubs and small saplings. Field sparrows were recorded on 99.5% of the Ohio Breeding Bird Survey blocks reporting detection of the species. Approximately, 80.8% of these detections were listed

as confirmed breeding. Every block surveyed in the unglaciated plateau had field sparrows detected (Peterjohn and Rice 1991). Even with the high detection rate Earnst and Andres (1996) state that the field sparrow is on an annual decline of 1.2%. This is thought to be a result from habitat loss due to intensive agricultural practices and to maturation of the eastern Ohio forests. It should also be noted that the severe winters of 1976-77 may have contributed to their decline but numbers were dropping before this event. In 1995, a breeding bird inventory was undertaken in 39 stands, ranging in age from 5 to 21 years of age, on all three units of the National Forest. Thirty-four detections of field sparrows were made in 9 of these stands. Detections were made on the Ironton Unit only.

Alternative A could have an effect on long-term creation of early successional habitat through timber harvesting. The field sparrow is a bird that uses a wide variety of brushy successional habitats, such as old fields and cutover hillsides where herbaceous vegetation is interspersed with brushy tangles and scattered small saplings. On the Forest, this habitat is maintained through management of forest wildlife openings, acquired through purchase of abandoned farmland and created through various timber harvesting techniques. The Indiana bat Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) address management and structure of hardwood stands, specifically through RPMs 1, 4, and 6 and TCs 1, 4, and 8. Limits to harvest activities (i.e., canopy cover-TC 1 and 4; lack of harvesting around hibernacula-TC 8) limit the amount of early successional habitat that could be created or where it could be created the future No bald eagle Reasonable and Prudent Measures and Term and Conditions should affect the field sparrow.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A.

Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). Indiana bat Conservation Recommendation 5 would have the same effect on the field sparrow as would Indiana bat Term and Condition 8, described above. Bald eagle and American burying beetle CRs should have no effect on this species.

Indiana bat Reasonable and Prudent Measures and Terms and Conditions could have slight cumulative adverse effects on the amount of early-successional habitat that may be created in the future on the WNF through timber harvesting. As stated for other early-successional species, hardwood timber cutting is being conducted on privately owned lands, and will likely continue in the future. However, these lands are not always harvested in a way to produce appropriate early-successional habitat (early-late phases), and in some cases these lands are harvested but are developed for some other use (e.g., strip-mining, residential developments). State Forest lands are managed to provide a diversity of habitats, including early-successional habitat (early-late phases). However, the majority of early successional habitat continues to be created and maintained through the Forest openings program and through abandonment of farmlands, including those farms acquired by the Forest Service. Acquisitions of abandoned farmland may

occur in the future, and the Forest opening program would continue in the future. Therefore some early successional habitat could be maintained on the WNF through this avenue. Because of this, only slight adverse cumulative effects are expected for the field sparrow and species requiring early successional habitat.

Eastern bluebird (*Sialia sialis*) – This bird inhabits open country, such as large grassy pastures, fields, and rights-of-way along roads bordered by fencerows and woodland edges. They also occupy weedy fallow fields, but avoid woodland interiors. They nest exclusively in cavities, primarily bird boxes, but they also use old woodpecker holes and natural cavities in fence posts and trees. The preferred bird box height is 3-5 feet; most nests in natural cavities are less than 10 feet high. Bluebirds were detected in 85.2% of the Breeding Bird Survey blocks and 32.3% of these were found on the unglaciated plateau which had an average of 6.1 individuals detected per route. This was the highest detection rate per route in the state (Peterjohn and Rice 1991). Earnst and Andres (1996) say that the Eastern bluebird is common and widely distributed in the state and that population levels appear to be stable after a decline in the population due to the severe winters of 1976-1978. Bluebird boxes are erected and maintained in appropriate habitats on the Athens and Ironton Districts.

Alternative A should have no effect on this species. The eastern bluebird uses open, grassy habitats. The Reasonable and Prudent Measures and Terms and Conditions do not address this type of habitat or its management. Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A. Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). The Conservation Recommendations should have no effect on this species or its habitat. No adverse effects to this species or its suitable habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Wood duck (*Aix sponsa*) – This bird prefers mature riparian corridors along streams, quiet backwaters of lakes and ponds bordered by large trees, and secluded wooded swamps. They nest exclusively in cavities, either natural ones in large trees or in nest boxes. Most nests are near or over water, but some are over 500 feet from water. Nest height ranges from 2-3 feet above water in boxes to more than 50 feet in mature trees. The Ohio Division of Wildlife conducts an active banding program on the wood duck. Two of the swim-in brood traps are regularly placed on wooded wetlands on the Wayne National Forest. The Division's wood duck coordinator feels that this species numbers are stable if not increasing in the state (Steve Barry, personal communication). Earnst and Andres (1996) had the same findings. Numerous wood duck nest boxes have been placed in various wetlands and along streams on the Wayne National Forest with great success.

Alternative A may benefit this species, since it is a cavity-dependant species. Indiana bat Reasonable and Prudent Measures (RPMs) 1-4 address the goals of forest stand structure. These RPMs call for the maintenance canopy cover in hardwood stands, and the protection of specific

tree types. Indiana bat Term and Condition 3 call for protection of snags, and Term and Condition 4 calls for maintenance of large, overmature trees in hardwood stands during harvest. These may become potential cavity trees in the future. The bald eagle Reasonable and Prudent Measures and Terms and Conditions should have no effect on this species. Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A. Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). These measures should have no effect on the wood duck. No adverse effects to this species or its suitable habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Virginia rail (*Rallus limicoal*) – This bird prefers dense marshy vegetation. They occupy shallow marshes dominated by cattails or other tall emergent vegetation. While this species is not known to occur in southeastern Ohio, it represents species that do. The Reasonable and Prudent Measures, Terms and Conditions and Conservation Measures do not address this habitat; therefore the alternatives would not affect this habitat or the species that require it. No adverse effects to the species or its habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Western chorus frog (*Pseudacris triseriata*) – This frog can be found in a variety of habitats including marshes, meadows, swales, and other open areas. Breeding occurs in early spring in the edges of shallow ponds, flooded swales, ditches, wooded swamps, and flooded fields. They usually remain close to the breeding grounds throughout the year, hiding from predators (and hibernating also) beneath logs, rocks, leaf litter, and in loose soil or animal burrows. Frog and Toad calling surveys are conducted within various wetland areas on the Wayne National Forest. This frog has been heard calling from one wetland on the Athens Unit and has not been detected during calling surveys on the Ironton Unit.

Alternative A should have no effect on this species. The western chorus frog is a semi-aquatic species living in and near transient to permanent water bodies. The Reasonable and Prudent Measures and Terms and Conditions do not address this type of habitat or its management. Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A. Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). Indiana bat Conservation Recommendation 4 calls for the creation of upland waterholes for the bat, which may seem like suitable habitat for this species. However, the chorus frog appears to prefer more open areas outside woodland settings. Therefore, Alternative C should have no effect on this species. No adverse effects to this species or its suitable habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Wood frog (*Rana sylvatica*) – This frog is most commonly found in moist woodlands during the summer. They hibernate under stones, stumps and leaf litter in the winter. Breeding occurs in very early spring in woodland ponds. Numerous sites on the Forest have been identified as wood frog breeding habitat areas, in part from the annual frog and toad calling surveys.

Alternative A should have no effect on this species. The wood frog is a semi-aquatic species living in and near water bodies, many of which are temporary in nature. The Reasonable and Prudent Measures and Terms and Conditions do not address this type of habitat or its management. Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that Reasonable and Prudent Measures and Terms and Conditions be implemented project by project, even though the BO's Reasonable and Prudent Measures and Terms and Conditions would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to this species would be similar as those described for Alternative A. Under Alternative C, the Conservation Recommendations would be incorporated into a Conservation Plan (as Forest Plan Appendix J). Indiana bat Conservation Recommendation 4 calls for the creation of upland waterholes for the bat, which may be considered suitable habitat for this species. Therefore, Alternative C may benefit the wood frog. No adverse effects to this species or its suitable habitat could be identified for any alternative. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Bluegill (*Lepomis macrochirus*) - The preferred habitat of the bluegill is slow or non-moving clear water containing small amounts of suspended clayey silts, with bottoms made of sand, gravel, or soft muck containing organic debris with scattered beds of aquatic vegetation. Some examples are lakes, ponds, sloughs, reservoirs and moderately deep stream pools. The primary diet of the bluegill consists of insects, insect larvae, small fish, fish eggs, and plant material. Spawning for the bluegill in Ohio usually occurs in mid-May to mid-June, when water temperature reaches 65-70 degrees Fahrenheit. Nests are commonly made in water depths of 1-4 feet on sand or gravel bottoms. They may also be constructed on other bottom materials as well as heavily vegetated areas. The bluegill has been collected from every 5th level watershed in the Forest.

Under Alternative A, The Indiana bat Reasonable and Prudent Measures (RPM) and Terms and Conditions (TC) should have no impact on the bluegill. However, some bald eagle RPMs and TCs could affect these species. Bald eagle RPM 1, TC 2 and 5 address the protection of bald eagle roosting habitat. Since the bald eagle most often roosts along water bodies, the protection of riparian trees can have beneficial effects to aquatic species. Riparian trees provide shade and organic nutrients to the aquatic system, affecting the water temperature and the food base. Bald eagle TC 9 reaffirms that if eagles are found on the Forest, that populations would be managed and monitored as directed by the RPMs and TCs. Again, this would equate to protection of roost trees.

Alternative B is the no action alternative, but in reality Forest Service biologists would continue to recommend that RPMs and TCs be implemented project by project, even though the BO's RPMs and TCs would not be incorporated into the Forest Plan through an amendment. Because of this, the effects to the bluegill would be similar as those described for Alternative A.

Under Alternative C, the effects to the bluegill would be similar as those described for Alternative A. However, discretionary Conservation Recommendations (CR) would be incorporated into the WNF's Conservation Plan. American burying beetle CRs 1 and 2 encourage minimal maintenance, reconstruction and construction of roads within 10 air miles of occupied ABB habitat. Roads have the potential to introduce sediment into aquatic systems. Minimizing road activities could reduce sedimentation of aquatic habitats, thereby resulting in a positive effect to any aquatic species. No adverse effects to bluegill or its habitat could be identified for any alternative, but some beneficial effects could result. Because of this, no cumulative adverse effects are expected to occur with implementation of any alternative.

Southern redbelly dace (*Phoxinus erythrogaster*) - The primary habitat of the southern redbelly dace is clear slow moving streams with long pools. These streams generally contain wooded undercut banks and are not subjected to frequent flooding. Undercut banks are desired for the sake of safety and shade. Unlike many other species of minnows the redbelly will school in the middle of the channel when frightened, especially if the cut banks are not present. The primary food source of the dace is algae and other plant debris, however they also eat aquatic insects, and small shellfish. The redbelly spawns in the spring and early summer in swift riffles over gravel bottom nests of other minnows. The southern redbelly dace has been collected from every 5th level watershed in the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Redfin Shiner (*Notropis umbratilis*) - Redfin shiners live in streams of all sizes with pools flowing slow to moderate over sand gravel or rock, often with aquatic vegetation. Redfin shiners tend to spawn from late spring through mid to late summer. The redfin spawns over nests of sunfishes, which usually consist of sand and gravel. They are attracted to these nests by the scent of a fluid released by the sunfishes during spawning. The redfin shiner has been collected from most 5th level watersheds in the Forest, however acid mine drainage has limited its distribution in some parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Blackside darter (*Percina maculata*) - The blackside darter generally lives in pools of creeks and small rivers with slow moving current and bottoms consisting of gravel and sand. This darter's primary food source is small crustaceans and aquatic insects. Spawning for the blackside occurs within the months of May and June. The blackside darter has not been collected in Lake Vesuvius or any stream flowing in or out of the lake. The blackside darter has been collected from most 5th level watersheds in the Forest, however acid mine drainage has limited its distribution in some parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Rainbow darter (*Etheostoma caeruleum*) - Moderate streams and small rivers with long swift riffles, clear water, and sand or gravel bottoms are the perfect habitat for the rainbow darter. Its food source is primarily aquatic insects such as Diptera, and Trichoptera larvae, as well as *Plecoptera naiads*. They may also eat Coleoptera and Odonata larva, small crayfish, and the eggs of other minnows, especially the white sucker. Rainbow darters spawn between the months of March through June. They spawn in swift riffles above sand and gravel. Most darters

especially the rainbows are sensitive to pollution, therefore it only occurs in streams and watersheds that have moderately low pollution content. The rainbow darter has been collected from a few 5th level watersheds in the Forest. Its natural distribution across the Forest is not as widespread as other MIS, and acid mine drainage has limited its distribution in some other parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Golden redhorse (*Moxostoma erythrurum*) - The golden redhorse lives in riffles, runs, and pools of streams over mud to rock bottoms. They also may live in large rivers and occasionally lakes. The food source of the redhorse consists of Trichoptera, Ephemeroptera, Copepoda, mollusks, Hemiptera and other items. Algae make up the smallest portion of the redhorse diet. The redhorse spawns between the months of May and July when the water temperatures rise to between sixty and seventy degrees Fahrenheit. Swift riffles are chosen by the redhorse for spawning, however, no nest construction has been observed. The golden redhorse has been collected from most 5th level watersheds in the Forest, however acid mine drainage has limited its distribution in some parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Sand Shiner (*Notropis ludibundus*) - Sand shiners inhabit pools and runs of creeks with sand and or gravel bottoms. It has also been found in large rivers as well as sandy lake areas. Typically the spawning season of the sand shiner occurs from late May to mid August. Sand shiners have a generalized diet consisting of aquatic insects, small crustaceans, and plant material. The sand shiner has been collected from some of the 5th level watersheds in the Forest. Its natural distribution across the Forest is not as widespread as other MIS, and acid mine drainage has limited its distribution in some other parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Banded darter (*Etheostoma zonale*) - This darter typically inhabits clear high gradient streams with strong current flow. It tends to live in riffles that are rocky with algae covered boulders and current strong enough to prevent silt deposition. Aquatic plants and accumulations of leaves, sticks and other organic debris provide perfect cover for the banded darter. The primary diet of the banded darter consists of immature aquatic insects. Spawning for this darter usually occurs from mid April into June and possibly as late as July. Spawning generally occurs in moderate to high gradient riffles where there is an abundance of algae and aquatic moss on the stones and boulders. Females deposit their eggs on this plant growth and tend to move downstream to deep water for the winter. The banded darter has been collected from some of the 5th level watersheds in the Forest. Its natural distribution across the Forest is not as widespread as other MIS, and acid mine drainage has limited its distribution in some other parts of the Forest. The direct, indirect, and cumulative effects to this management indicator species would be the same as those described for the bluegill.

Summary of Effects

After review of the direct, indirect and cumulative effects of the alternatives on the MIS, a determination of “beneficial effect”, “no effect”, or “negative effect” was applied for each

species. Table 1 summarizes these determinations for each species by each element of the alternatives. The following abbreviations were used in Table 1 because of the table's size.

Abbreviation	**Definition**
IB	Indiana bat
BE	Bald eagle
ABB	American burying beetle
RPM	Reasonable and Prudent Measure
TC	Term and Condition
CR	Conservation Recommendation
1	No effect
2	Positive Effect
3	Negative effect

Table 1. Summary of Effects on MIS for the Elements of each Alternative

	Cerulean warbler	Pine warbler	Pileated warbler	Ruffed grouse	White-eyed vireo	Common yellowthroat	Field sparrow	Eastern bluebird	Wood duck	Virginia rail	Western chorus frog	Wood frog	Bluegill	Redbelly dace	Redfin shiner	Blackside darter	Rainbow darter	Glden redhorse	Sand shiner	Banded darter
Alt. A, B & C																				
IB RPM 1	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 3	2	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 4	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB RPM 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB RPM 6	1	1	1	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 1	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 3	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. A & B)	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 4 (Alt. C)	2	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1
IB TC 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 8	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
IB TC 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE RPM 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE RPM 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE TC 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 5	2	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
BE TC 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE TC 9	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2

Table 1. Summary of Effects on MIS for the Elements of each Alternative

	Cerulean warbler	Pine warbler	Pileated warbler	Ruffed grouse	White-eyed vireo	Common yellowthroat	Field sparrow	Eastern bluebird	Wood duck	Virginia rail	Western chorus frog	Wood frog	Bluegill	Redbelly dace	Redfin shiner	Blackside darter	Rainbow darter	Glden redhorse	Sand shiner	Banded darter
Alt. C																				
IB CR 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IB CR 4	2	1	2	2	2	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
IB CR 5	2	1	2	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
BE CR 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 1	1	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
ABB CR 2	1	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
ABB CR 3	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ABB CR 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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