

Wildlife Resources

Introduction

The Land and Resource Management Plan (Forest Plan) for the Monongahela National Forest (MNF) acknowledges the importance of monitoring (data collection) and subsequent evaluation of that data to keep the Forest Plan current and responsive to changing conditions and issues, and to provide feedback mechanisms for adaptive management. The 2006 Forest Plan describes the need for monitoring and evaluation to meet four categories: 1) required monitoring items related to the National Forest Management Act (NFMA); 2) attainment of goals and objectives set forth in the Plan; 3) implementation of Plan standards and guidelines; and 4) effects of prescriptions and management practices.

Monitoring of wildlife resources is required as part of NFMA, to determine to what extent Forest Management is moving toward desired conditions for Management Indicator Species (MIS) and other wildlife species associated with MIS habitats. Wildlife and habitat monitoring also are required to address questions related to Forest-wide direction and management practices and Plan goals and standards. Chapter IV of the Plan Revision provides a monitoring matrix with questions designed to focus monitoring efforts toward achieving these stated needs. In addition to the four categories noted above, wildlife monitoring is required to address questions related to the viability of species included or proposed for inclusion on the Federal Endangered Species List. Monitoring is also essential to ensure that Forest management practices do not adversely impact the viability of Regional Forester Sensitive Species' (RFSS) populations.

2010 Accomplishments

The Forest works with the West Virginia Division of Natural Resources (WVDNR) to accomplish wildlife management objectives, including habitat restoration and enhancement, through a cooperative agreement between the two agencies. The Forest conducts inventory and monitoring of federally threatened and endangered species, MIS, RFSS, and other species groups (e.g., breeding birds and bats), while the WVDNR tracks populations of most of the game species on the Forest. The MNF cooperates with other Federal and State agencies, universities, and NGOs through formal and informal agreements and consultations, to develop and implement monitoring plans and conservation strategies for threatened, endangered and sensitive (TES) species. The wildlife program and its partners accomplished a wide range of activities in 2010 associated with the management and monitoring of wildlife resources on the Forest, in accordance with applicable laws, USFS policies, and Forest Plan direction. This document will focus primarily on the monitoring aspects of our accomplishments. However, the wildlife program, in cooperation with our partners and other Forest programs, also accomplished habitat restoration and enhancement activities on over 6,800 acres on the Forest. Forest biologists and bio-technicians also developed and participated in conservation education and other outreach activities and inter-agency studies. General accomplishments are summarized in Table WL-1.

Table WL-1. Wildlife Resource Accomplishments, FY 2010

Activities, products and services	Quantity
Early-successional habitat maintenance and enhancement	1,960 ac
Wetland/open water habitat created or restored (e.g., Fig. WL-1)	3,060 ac
Forested habitat restoration or enhancement (e.g., snag creation, spruce thinning)	570 ac
Plantings of native trees, shrubs and herbaceous species	1,240 ac
Structures (e.g., water tanks, fences) installed	7
Habitats inventoried for mapping/planning purposes (e.g., ESH, wetlands, spruce)	67,320 ac
Wildlife TES clearance surveys for proposed forest management projects	3,920 ac
Wildlife surveys associated with long-term monitoring for TES species	106,130 ac
Cooperative wildlife studies (with Universities or other research groups)	4
Wildlife educational programs (outreach events/approx. number attending)	17 / 4,000
Temporary employees (students hired for wildlife inventory/monitoring work)	3

Many of these activities and accomplishments also are tied directly to Management goals and objectives and standards and guidelines as set forth in the Forest Plan for Threatened, Endangered, and Proposed Species (FP, p. II-22) and Wildlife and Fish resources (FP, p. II-29).

Monitoring and Evaluation

The Forest Plan outlines monitoring to address wildlife concerns and goals and objectives for Management Indicator Species (MIS); Threatened, Endangered, and Proposed (TEP) species; Regional Forester Sensitive Species (RFSS); and other wildlife and habitats of concern or interest. In addition to addressing the goals and objectives associated with management and conservation of these species, the Forest Plan sets forth specific monitoring questions developed to ensure that monitoring and evaluation address information essential to measuring items related to Forest Plan direction. The 2006 Forest Plan Monitoring Matrix (Chapter IV) includes eight questions that are related to wildlife resources, as follows:

10. To what extent is Forest management moving toward desired habitat conditions for MIS and species associated with MIS habitats?

38. To what extent is Forest management contributing to the protection and recovery of threatened and endangered species?

39. To what extent is Forest management contributing to the conservation of sensitive species and maintaining or restoring their habitat conditions?

43. To what extent is Forest management influencing the viability of native and desired non-native species or otherwise affecting species composition and habitat productivity?

44. To what extent is management on Forest lands influencing populations of terrestrial or aquatic non-native species that threaten native ecosystems?

30. To what extent are road and trail closures effective in prohibiting unauthorized motor vehicle use and associated impacts?

45. Is Forest management providing adequate habitat diversity and structure through maintenance or enhancement of snags, culls, leave trees, and downed woody debris?

46. Is the Forest providing adequate habitat to meet the demand for wildlife and fisheries related social and recreational opportunities?

The wildlife program, in cooperation with other Forest programs and outside partners, has been actively engaged in management actions and monitoring across the Forest to move toward desired habitat conditions for a variety of wildlife species and to meet other related Plan management goals and objectives. Inventory, monitoring and evaluation efforts, and ongoing studies in support of TES, MIS, RFSS and other species and habitats of interest are described in more detail in the following sections, along with the monitoring questions to which they most directly relate. In most cases, additional monitoring questions are addressed as part of those summaries.

FEDERALLY THREATENED/ENDANGERED SPECIES

Monitoring Question 38. To what extent is Forest management contributing to the protection and recovery of threatened and endangered species?

The Forest Plan direction for Federally Threatened, Endangered, and Proposed (TEP) species is to provide habitat capable of contributing to the survival and recovery of species listed under the ESA, and to provide habitat that may help preclude Proposed species from becoming listed. Toward that end, the Forest has been actively monitoring the species noted above, while concurrently participating in studies designed to better understand the ecology of these species. In addition, the Forest develops management plans and implements activities to restore and enhance TEP habitats. To ensure that the best science is used in our management efforts, Forest biologists coordinate and cooperate with state and other federal agencies, NGOs, and universities on developing and implementing wildlife studies and monitoring programs. We also participate in regional working groups on proactive habitat conservation topics and initiatives.

Three federally listed vertebrate species currently inhabit the MNF: the Cheat Mountain salamander (*Plethodon nettingi*), Indiana bat (*Myotis sodalis*), and Virginia big-eared bat (*Corynorhinus townsendii virginianus*). The WV northern flying squirrel (*Glaucomys sabrinus fuscus*), formerly a federally endangered species, was delisted in September of 2008; however, the squirrel is still considered a RFSS, and a Management Indicator Species (MIS) for the Forest, and direction set forth for the species in the 2006 Forest Plan remains in effect. In addition to the general direction for TEP noted above, the 2006 Forest Plan lists specific goals and standards associated with each of these TE species.

Cheat Mountain Salamander, *Plethodon nettingi*

The Cheat Mountain salamander (Figure WL-2) is a federally threatened species, whose current range lies primarily within the proclamation boundary of the MNF.



Figure WL-2. Cheat Mountain Salamander at a control site on Stuart Knob, MNF

Dr. Thomas Pauley of Marshall University has delineated known and potential habitat for the Cheat Mountain salamander (CMS) and has conducted surveys across much of the Forest since the species was listed, in addition to conducting independent research associated with the salamander on the Forest. The Forest has also worked with the University of Wisconsin to develop additional CMS mapping and modeling for use in conservation planning and project impact assessment.

In FY 2010, Dr. Pauley conducted surveys at the Timberline Four-Season Resort on Forest Service land in Tucker County, as part of a long-term study to examine effects of the Salamander Run ski trail on a population of CMS. Based on historical information from that study, several mitigation measures were begun in 2008-10 to mitigate for CMS habitat that was lost or degraded during construction and operation of the Resort's ski slope. These measures included installation of leaf fences and irrigation via sprinklers; cover board arrays were also placed in this area and a nearby control area to assess whether these habitat measures were successful. Sixteen acres of habitat were inventoried during 2010 as part of the restoration project.

Administrative studies: The MNF continued work associated with a Participating Agreement with Marshall University to investigate the effects of Forest trails and gated roads on CMS populations and, if appropriate, recommend management actions to ameliorate the potential for negative impacts from existing or proposed trails. Cover board and time-constrained visual surveys were conducted four times during the summer at 20 sites across the Forest along trails, roads, and control sites within known CMS habitat. Environmental data (e.g., microclimate measures, soils and vegetation data) also were taken in association with the amphibian surveys. In FY 2010, an estimated 528 acres of CMS habitat were inventoried as part of this study.

In 2010, cover-board surveys resulted in a total of 717 salamanders captured. Of the 139 CMS caught, 62% were new captures and 30% were recaptured animals (the remainder either escaped or were too small to be marked). The presence of CMS varied by month of survey and site, and CMS were never observed at seven of the sites (35%) during 2010. In May, 55% of the sites had known CMS presence, 40% in June, 40% in July, and 50% in August. CMS occupancy and

activity may have been influenced by the unusual dry field season experienced in 2010. Nighttime transects yielded approximately 2,000 salamanders of nine species; *Plethodon nettingi* accounted for approximately 56% of these individuals. Data analysis will be conducted in FY 2011 and final results and management recommendations, available in FY11 or FY12, will be used to assist the MNF in developing protocols to minimize the impact of roads and recreational-use trails on *Plethodon nettingi* populations, and to develop mitigation and/or habitat restoration plans for this federally listed species where practicable.

Evaluation, Conclusions, and Recommendations for the Cheat Mountain Salamander

Inventory and monitoring data and mapping developed in association with CMS studies on the Forest have been used in management decisions and planning efforts for both the MNF and other non-Forest Service projects (e.g., energy corridor planning and conservation land acquisition). However, because most of the CMS surveys to date have been associated with project clearance or research studies, there remains a need to conduct more systematic inventory for this species across potential habitats across the Forest to ensure that our management is contributing to the protection and recovery of the species. In addition to assisting us in our Forest management and conservation goals for the Cheat Mountain salamander, the above-mentioned efforts also address our responsibilities under the Endangered Species Act [Section 7(a)(1)], and should contribute to the recovery of this species.

It is recommended that inventory efforts be increased across the Forest, particularly in areas not surveyed as part of historical or ongoing studies or project clearance, to increase understanding of the distribution of the Cheat Mountain salamander on the MNF and to develop more refined mapping for use in CMS habitat restoration/conservation projects and other Forest planning efforts. Results of the current trails and roads study should be used to modify management and implement conservation measures in the vicinity of Forest roads and trails where appropriate.

Endangered Bat Species

Two endangered bat species, the Indiana bat and the Virginia big-eared bat (VBEB), are found on the MNF. The MNF conducts forest-wide inventory and monitoring of these and other bats on an annual basis. The purpose of this program is to inventory watershed areas for all species of forest bats and to clear project areas as part of Section 7 consultation, as well as to monitor long-term sites across the forest. Long-term monitoring will help us to detect any unusual changes in bat populations, which may or may not be associated with management activities so that we can act appropriately to ensure continued species viability on the Forest. The WVDNR also has been conducting hibernacula and summer colony cave surveys on the Forest and elsewhere in WV for 25 years. The combined efforts of the Forest and WVDNR provide an exceptional long-term database for bat populations across the state.

Winter hibernacula counts and White-nose Syndrome. During the 2008-09 hibernacula counts, the fungus associated with White-nose Syndrome (WNS) was detected in several caves located in Pendleton County, including caves used as hibernacula by VBEBs and Indiana bats, providing the first documentation of WNS in the state of West Virginia. White-nosed syndrome is considered to be responsible for massive die-offs of bats, including Indiana bats, in other northeastern states.

In the winter of 2009-2010, WVDNR biologists conducted scheduled winter bat surveys at several caves to examine the spread of WNS in West Virginia. In addition, entrance surveys were conducted by Forest Service, WVDNR, the National Park Service (NPS), and volunteers from the caving community to note the presence of bats outside the cave entrance. Suspect bats were collected and sent to the Southeast Cooperative Wildlife Disease Study for analysis, where it was determined that WNS was present in six additional WV counties: Greenbrier, Hardy, Jefferson, Mercer, Monroe, and Pocahontas (Endangered Species Federal Assistance Performance Report, WVDNR, 2009-2010). On April 15, 2010, the MNF Forest Supervisor signed an emergency closure order, prohibiting entry to all caves on the Forest until June 30, 2012 to protect endangered, threatened and sensitive bat species.

Summer mist-netting surveys. As part of the Forest's bat monitoring program, and to meet our obligations in regard to the Endangered Species Act (as noted in the USFWS Biological Opinion associated with Forest Plan Revision), mist-netting is conducted annually both within proposed project areas and across the Forest in long-term monitoring sites. In 2010, mist-netting was conducted at 30 long-term sites on the MNF; captured Indiana bats that met certain criteria were fitted with a radio-transmitter. A total of 609 bats of eleven species were captured, including seven male Indiana bats, nine Virginia big-eared bats, and 14 small-footed bats (*Myotis leibii*, RFSS). Three bridges also were surveyed; however no bats were captured at those sites. Data from these surveys provide general information regarding Forest habitat use by a variety of bat species, as well as critical information regarding the occurrence of TEP and RFSS bat species and the potential for Indiana bat maternity colonies on the Forest.

The mist-net data from our long-term sites provides valuable baseline information for use in assessing potential changes in bat species composition or abundance that may result from Forest management or broader regional issues affecting bat populations. In addition, the historical mist net data developed by the MNF provides a unique dataset for assessing impacts to the Forest's bat populations as a result of WNS. By far the most numerous species caught during long-term site monitoring to date has been the northern long-eared myotis (*M. septentrionalis*), with the little brown bat (*M. lucifugus*), red bat (*Lasiurus borealis*), big brown bat (*Eptesicus fuscus*), and tri-colored bat (*Perimyotis subflavus*) also common captures. Several of those species, particularly the *Myotis*, have been hard-hit by WNS.

Preliminary analyses of long-term site data on the Forest by MNF biologists indicate that, while the abundance of individual species have not declined significantly across the Forest since the discovery of WNS in WV caves, a reduction in numbers of *M. lucifugus* was observed in the vicinity (five miles) of caves where WNS was observed in Pendleton County, West Virginia in 2008-09 (Fig. WL-3). In addition, significant increases in the proportion of non-reproductive females and concurrent decreases in the proportion of pregnant and post-reproductive female little brown bats were observed across the Forest. A lower proportion of scrotal males (as opposed to non-reproductive) also was noted in the vicinity of known WNS caves, though this difference was not significant across the entire Forest. As the number of caves with WNS increases across the state, we expect that our long-term data will indicate more significant changes in the demographic characteristics of *Myotis* and other bat species across the MNF.

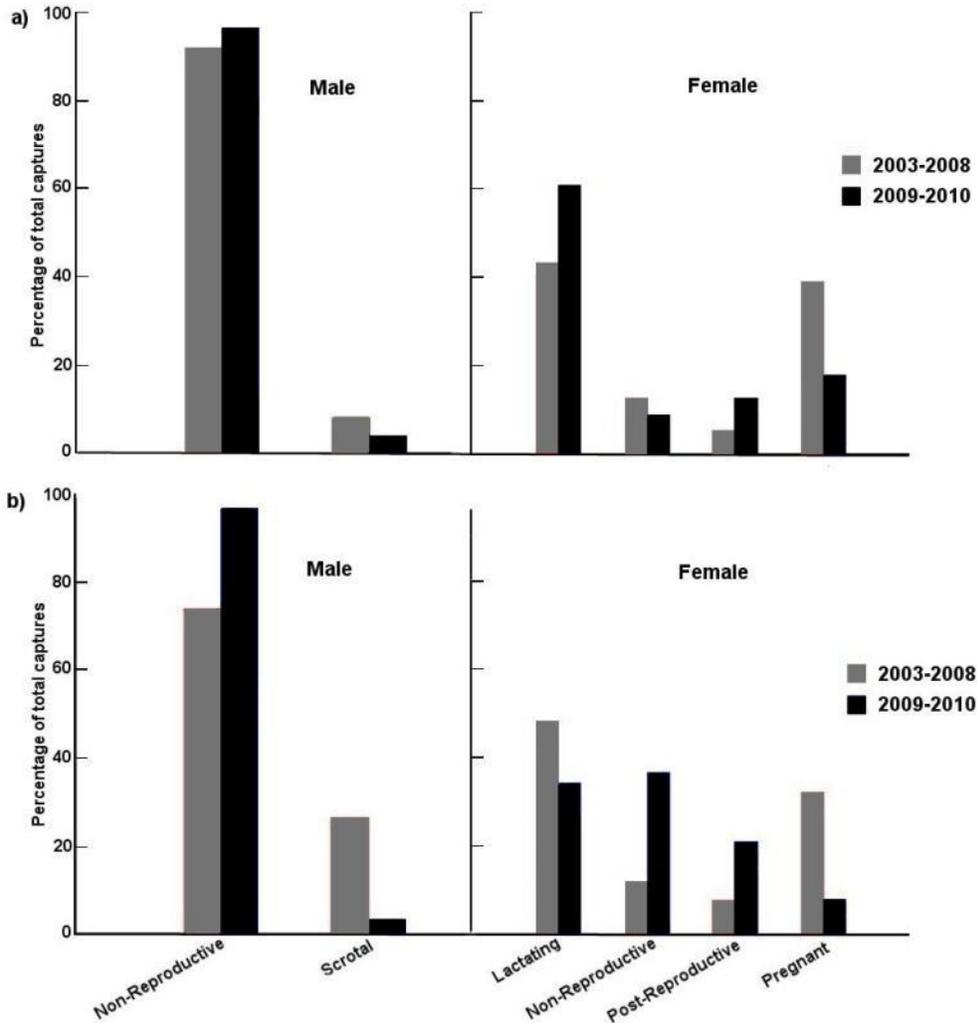


Figure WL-3. Proportion of adult little brown bats in reproductive condition categories during surveys prior to and after the first observations of WNS in Pendleton County, WV across: a) the majority of the Forest and b) mist-net sites located within 5 miles of known WNS caves

Acoustic monitoring. In 2009, the MNF and other National Forests in the region began conducting acoustic monitoring as part of a regional effort to track bat populations at large spatial scales in response to the rapid spread of WNS. That year, the State of WV also began running widespread survey routes. This year, MNF biologists and Americorps personnel working at the Forest joined with the WVDNR and other collaborators to complete surveying of approximately 85 acoustic transect routes across the state. These routes were each run 2-3 times during the summer, using ultrasonic detectors and following a standardized acoustic sampling protocol, for a total of over 5,400 miles of survey effort in 2010. Data were sent to the WVDNR and Eric Britzke for analysis of species and habitat information. This acoustic work should help state and federal biologists better document changes in species distribution across broad landscapes and identify possible concentrations of individuals or species in key habitats. Documenting bat distribution numbers (indices) during the summer and across broad landscapes may provide an additional estimate of the effects of white-nose syndrome on overall bat populations on the MNF, in West Virginia, and region-wide.

Outreach programs. Forest biologists presented educational programs about bats, including TES bat species, and bat conservation to schools and other youth groups throughout the year. The Forest has developed a “Bat Trunk” that has been very helpful in these presentations. The trunk is available at no cost for teachers and other environmental educators to borrow for use in their own programs. In addition, the Forest has a 60-foot inflatable cave that is brought to events where children are encouraged to don hardhats with headlamps and crawl into the cave and learn about cave ecosystems, including the wildlife species that depend on them and the threat of white-nose syndrome. In FY 2010, in addition to presenting to individual classrooms and groups, the MNF worked with the WVDNR, USFWS, and local cavers to develop and staff an educational booth at the 79th Mountain State Forest Festival in Elkins, WV. Over 2,600 children and adults participated in the cave visit and other educational bat and cave-associated activities.

Indiana Bat, *Myotis sodalis*.

Summer monitoring on the MNF. Historical Indiana bat capture locations are included as sites in our long-term monitoring program. As part of that ongoing mist-netting effort, transmitters are attached to selected bats, and radio-telemetry is used to gather information about habitat use by Indiana bats on the Forest.



Figure WL-4. Indiana bat being fitted with a band after capture.

As a result of mist-netting efforts in 2010, seven male Indiana bats were banded (Figure WL-4), fitted with transmitters, and tracked to roost trees. One of these bats was followed to a forested floodplain along the Buffalo Fork of the Little River where it remained through the life of the transmitter, using several different roost trees in the same area. The remaining six Indiana bats were captured and tracked to roost trees in the Reeds Creek area (northeastern part of the Forest), the same area where post-lactating females were captured in 2008 and 2009. No maternity roost was found in either of those years, and emergence counts at the roost trees identified for the male Indiana bats tracked in 2010 also failed to indicate the presence of a maternity roost. Additional mist-netting will be conducted in FY11 in an attempt to locate a maternity colony and, regardless

of the results of those surveys, we expect that the long-term mist-net sites in the area will continue to be surveyed on a regular basis in the future.

Winter monitoring/Hibernacula counts. Eleven Indiana bat hibernacula are located within the MNF proclamation boundary, but only three (Big Springs Cave, Cave Hollow/Arbogast Cave, and Two-Lick Run Cave) have all or most of their entrances on Forest Service land. Big Springs was only partially surveyed in 2009-10 (only the front portion of the cave); however, the number of Indiana bats using that hibernacula had shown a general increase over the last 22 years (Fig. WL-5). Cave Hollow/Arbogast and Two-Lick Cave, neither of which were monitored in 2009-2010, have been less consistent, with Two Lick fluctuating from a high of 12 in 1995, to zero Indiana bats detected in 2003 (Figure WL-5). Cave Hollow has experienced a general upward trend in number of *M. sodalis* found wintering in the cave since the early 1990's.

A total of 12 caves in 7 counties were surveyed by the WVDNR during the winter of 2009-10. Nine of these caves contained *M. sodalis*, with a total count of 19,479; a 39.9% increase over the total in those same caves during previous surveys at those sites (WVDNR 2010). However, the percent changes in individual caves ranged from -41.1% to +44.3% at Hellhole, which had an increase of 5,699 Indiana bats as compared to the last survey there.

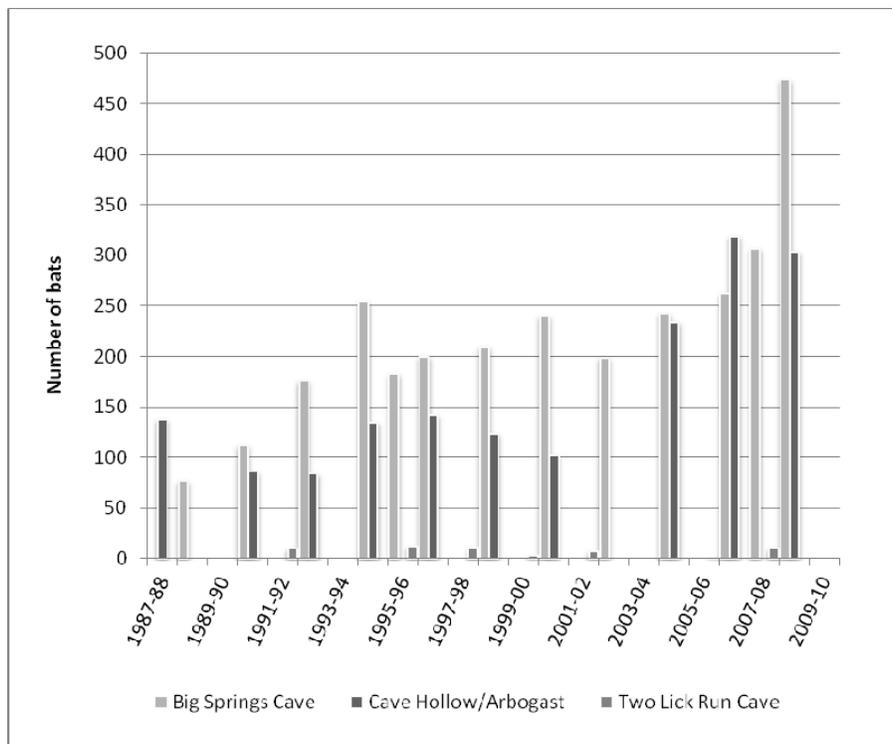


Figure WL-5. Hibernacula counts from three caves with entrances on the MNF, 1987-2010

Management. Snag creation projects were planned and implemented within the Forest to improve foraging, roosting and fall swarming habitat for Indiana bats by reducing canopy closure to a more optimal level and increasing available roost sites over time. It is expected that these projects also will help generate mature forest structure characteristics for a variety of wildlife

species. Trees identified for snagging were girdled with an axe or chainsaw, to ensure a supply of snags on approximately 500 acres of land across the Forest in FY10. Ponds, vernal pools, and other water sources also were created and/or maintained on approximately 500 acres of ridge tops and other potential bat habitats to provide habitat enhancement for bats. In addition to active habitat management, existing cave gates put in place to conserve critical bat habitat were monitored to ensure that they were still functional.

Virginia Big-eared Bat, *Corynorhinus townsendii virginianus*.

Virginia big-eared bat populations are surveyed in cooperation with WVDNR, and the MNF has an ongoing program of mist-netting and telemetry work to gather information about habitat use by bats on the MNF (see above). The Virginia big-eared bat (VBEB) is a cave-obligate species, with its largest populations located in West Virginia. A WVDNR census of 10 VBEB maternity colonies across the state was conducted in June of 2010 and resulted in an estimate of 7,142 bats – slightly less than the 2009 count, but still the second highest total on record for these sites since the counts began in 1983 (Endangered Species Federal Assistance Performance Report, WVDNR, 2009-2010).

Changes in summer colony population size at individual caves ranged from -26.6% at Cave Hollow/Arbogast (following a 16.8% increase at that cave last year) to +15.7% at Mill Run Cave. Six of the ten colonies censused have entrances location within the Forest Proclamation Boundary, including Cave Hollow/Arbogast. The changes in VBEB estimates associated with the other five caves from 2009 to 2010 are: Cave Mountain (-14%), Mystic -4.9%), Peacock (+9.8%), and Schoolhouse Cave (+4.9%).

As noted previously, hibernacula counts revealed the presence of WNS in several additional caves in the winter of 2009-10. While some of these caves are used as hibernacula by VBEBs, no sign of WNS was found on any VBEB bats. Of particular interest was Hellhole Cave, which supports the largest VBEB maternity colony in the world. Approximately 10,000 Virginia big-eared bats were noted in Hellhole during this hibernacula count, the highest count ever recorded for the species, yet despite the presence of WNS on other bat species in the cave, no VBEB showed evidence of the fungus.

Evaluation, Conclusions and Recommendations for Indiana & Virginia Big-eared Bats

Cave monitoring results over the recent past indicate that numbers of both Indiana bats and Virginia big-eared bats in maternity colonies and hibernacula on or near the Forest are generally stable or increasing. These results indicate that Forest management practices are not having any large-scale detrimental impacts to these species or their habitats, and in many cases (e.g., snag and wetland creation and gating or closing of select caves) may be having positive influence on populations. However, the spread of WNS through West Virginia caves could drastically alter that outlook. As such, continued intensive monitoring is needed to assess population viability on an annual basis, particularly in the face of this and other broad-scale threats to bats.

The repeated Indiana bat captures, including post-lactating females, at two general locations in the Forest, indicate the presence of maternity colonies that likely would not have been identified without the implementation of the long-term mist-netting program on the Forest. Because these two areas are separated by approximately 20 miles, it is likely that additional maternity colonies

may be present on the Forest. The general habitat associated with both capture areas consists of a patchwork of Forest Service land and private land with a mosaic of both forested and agricultural land use types. The inclusion of openings of various types, including range allotments, streams and old skid roads, in the immediate vicinity of roost trees indicates that management within specific forested habitats likely would be beneficial for the bat. In addition, mist-netting work in the vicinity of created vernal pools indicates that development of such water sources can provide an important summer habitat resource for a wide variety of bat species. Data collected as part of the mist-netting and telemetry work will be analyzed in FY2012 to make recommendations regarding best management practices for enhancing habitat across the MNF for the Indiana bat and other tree-roosting bats.

Furthermore, based on the results of mist-netting and Indiana bat telemetry work over the years and a review of the literature, the Forest should continue to plan and implement pro-active bat management activities (e.g., timber management, snag creation, and wetland creation and restoration). Given the potential impacts of WNS on wintering bat populations, conservation efforts in the form of both cave protection and summer habitat enhancement should be a focus for a variety of bat species, along with focused monitoring to ensure that those efforts are directed appropriately. Monitoring of summer and winter populations, using a variety of techniques (i.e., hibernacula counts, mist-netting and acoustic monitoring) should be continued.

MANAGEMENT INDICATOR SPECIES

Monitoring Question 10: *To what extent is Forest management moving toward desired habitat conditions for MIS and species associated with MIS habitats?*

Forest Plan direction is to monitor Management Indicator Species (MIS) and their relationships to habitat affected by management to determine whether Forest management is moving toward providing desired habitat conditions for MIS and associated species. This item is addressed through the monitoring of MIS and their habitats, and the creation or enhancement of suitable conditions for these species. MIS species for the Forest include the WV northern flying squirrel, wild turkey (*Meleagris gallopavo*), cerulean warbler (*Dendroica cerulean*), and wild brook trout (*Salvelinus fontinalis*). The brook trout is addressed in the Aquatic Resources portion of this report. Game species, such as the wild turkey, are monitored by the WVDNR via both the collection and analysis of harvest data and ongoing DNR research projects that provide forest-wide population indices. In addition, the Forest and WVDNR cooperate in songbird point count monitoring and breeding bird surveys that provide additional forest-wide data on both the wild turkey and cerulean warbler. The Forest has also been involved in a Participating Agreement with West Virginia University (WVU) specific to the cerulean warbler.

West Virginia Northern flying squirrel, *Glaucomys sabrinus fuscus*

The WV northern flying squirrel (NFS) was listed as a federally endangered species in 1985. Since that time, thousands of flying squirrel nest boxes have been placed and monitored on the MNF, which encompasses the vast majority of this species' habitat, and live trapping surveys have been conducted in proposed project areas. In December 2006, following a review of the squirrel's status, the USFWS formally proposed removing federal protection for the flying squirrel. The species was officially removed from the list in October of 2008. A NFS pilot study designed and conducted by MNF biologists resulted in the capture of over 100 NFS, including a

large number of recaptures, through the fall of 2008. This capture data was used, in association with other historical NFS capture data, in the USFWS's decision to delist the species. It is also being used to inform the Forest's long-term monitoring efforts, which will contribute to the collaborative survey and monitoring plan (with the WVDNR and USFWS) included as part of the Service's post-delisting monitoring plan for the species.

As part of our NFS long-term monitoring plan implementation, an additional 250 nest boxes were installed at ten new sites across the Forest, in addition to the ten already in place as part of the pilot project. In FY2010, the Forest and WVDNR monitored these new boxes as well as historic nest boxes across the MNF and elsewhere. Despite this continued monitoring, no NFS were captured by MNF biologists during either the fall of 2009 or spring of FY2010. The WVDNR also had less success than in previous years, with no NFS caught in the fall of 2009 and only six captures (at three sites) during the following spring (Endangered Species Federal Assistance Performance Report, WVDNR, 2009-2010).

Other studies continue on the Forest and surrounding lands to gain additional information regarding NFS life history and habitat requirements. In addition, the Forest is actively involved in spruce restoration/enhancement efforts in support of the Forest Plan long-term objective of increasing mid-late and late-successional spruce forest acreage to provide optimum habitat for the NFS and other high-elevation spruce and spruce-hardwood species. The Forest Plan's inclusion of a Management Prescription focused on restoration of spruce and spruce-hardwood habitats on the MNF (MP 4.1) is expected to have a positive influence on the viability of the species in the future, and so played a large role in USFWS's decision to delist the northern flying squirrel. In FY2010, the Forest completed an estimated 74 acres of understory spruce release and an additional 75 acres of land were planted with spruce seedlings.

Evaluation, Conclusions, and Recommendations for the WV Northern Flying Squirrel

Establishment of a long-term monitoring program for this species began in FY2009 and we completed nest box set-up at sites (with one exception) in 2010. The paucity of captures in 2009 and complete lack of captures on-Forest during FY2010 is cause for some concern, particularly given the relative consistent captures at some of those sites previously. Continued monitoring should provide a better indication of the current status of the species in the monitored area. If next box monitoring in FY2011 continues to result in a lack of NFS captures, it is recommended that a more concerted effort (e.g., returning to a higher level of box checks combined with trapping similar to that implemented during the pilot study) be employed in FY2012.

Continued monitoring of NFS will help the Forest determine population occupancy patterns and refine our understanding of suitable habitat, thus allowing us to better manage for the protection and further recovery of this species. Monitoring for the NFS on the Forest also will contribute to the needs and goals set forth in the USFWS's Post-delisting Monitoring Plan for the NFS. In addition to landscape-level monitoring for the NFS, both the species and habitat should be monitored in areas managed for spruce restoration and enhancement (i.e., using adaptive management to ensure that habitat modifications are beneficial to the NFS and associated wildlife species). The Forest Plan's MP 4.1 is designed to aid in the recovery of the NFS and other TES species associated with these habitat types. Within suitable squirrel habitat, spruce and spruce-hardwood stands would generally be allowed to grow older and develop uneven-aged

structure over time. Areas within MP 4.1 (and other appropriate areas) may be managed to encourage spruce regeneration and promote desired habitat characteristics, while minimizing ground disturbance. However, it is recommended that no management be implemented in known or suitable NFS habitat for the purposes of enhancing habitat for the species without specific research indicating that the proposed management will improve or maintain habitat for that species, per Forest Plan guidelines (FP II-27, TE64).

Wild Turkey, *Meleagris gallopavo*

As a game species, wild turkey populations on the MNF are regulated by both available habitat, which can be affected by Forest land management, and by harvest pressure from hunters, which is affected by state (WVDNR) regulations as well as by weather and other conditions during the hunting season. The WVDNR's data indicated a fall 2009 harvest of 1,208 wild turkeys, almost exactly the same as that of the previous year. The 2010 spring gobbler harvest was 10,209, about 4% higher than the 2009 harvest. The turkey brood survey count for 2010 was down 25% as compared to 2009, indicating that the 2012 harvest will likely be lower than the 2011 harvest (as the number of gobblers born two years prior to a spring turkey season generally provides a good forecast of that spring's gobbler harvest).

While the 2009 WV mast survey showed a considerable decrease in the majority of mast species compared to the previous year, the 2010 mast survey indicated a strong mast year. Indices for all oaks (except scrub oak) were over 100% higher than in 2009, black cherry production increased 124%, and the statewide index for combined hard mast species and black cherry was well above the 40-year average. Because of the irregular patterns of abundance we should be cautious when comparing these indices. However, the increase in acorn production can be an important predictor in harvest because oak are the most valuable mast species in West Virginia, and in a good acorn year, turkey tend to disperse across larger foraging areas. Mast conditions impact over-winter survival and reproductive success of many wildlife species, including wild turkey.

The MNF works with the WVDNR, National Wild Turkey Federation (NWTf) and other groups to plan and implement management for wild turkeys across the Forest. In 2010, over 1,900 acres of early successional habitat was created or maintained adjacent to forested lands to enhance the value of these areas for wild turkey, ruffed grouse, woodcock, and other important game and non-game species. In addition, the Forest inventoried over 5,600 acres of wildlife openings and other early successional habitat for entry into an updated Forest-wide spatial database.

Evaluation, Conclusions, and Recommendations for the Wild Turkey

Population indices based on harvest data should be viewed cautiously, as many factors that have little to do with the overall populations of game animals may affect harvest success (e.g., hunting season variations, changes in hunting regulations, weather, hunter participation, access). Also, although harvest data is a fairly good indicator of hunter success rates, the harvests only complicate the Forest's ability to determine what effects Forest activities or management may be having on game populations. In fact, good harvest can be an indicator of poor habitat conditions, in terms of mast production, because turkeys are then clustered in the fewer good habitat patches in higher densities, allowing for easier hunting. The mast survey data collected by the DNR is perhaps a better barometer for how Forest management is meeting the needs of the wild turkey and similar species. However, mast survey results have shown considerable annual fluctuation.

Thus, more focused monitoring for this and other game bird species may be needed in the vicinity of existing and proposed project areas in order to get a better understanding of how management on the Forest is affecting wild turkey populations overall.

Cerulean Warbler, *Dendroica cerulea*

Breeding Bird Survey data from 1966-2005 indicate a decline of about 3% per year throughout the cerulean warbler's breeding range, -3.2% annually during the ten-year period from 1996-2005. These data also show that the species' highest population densities occur in the central Appalachian Mountains. West Virginia is in the core of the species' breeding range, with relatively high densities, though numbers have been steadily declining in the state's breeding populations as well. The Partners In Flight plans for the three physiographic areas located in West Virginia identify the cerulean warbler as the species of highest conservation concern within mature deciduous forest habitats. This warbler was a candidate for federal listing in 2002. However, the USFWS determined that listing the species as threatened under the ESA was not warranted. Instead, the USFWS will pursue cooperative conservation initiatives designed to reverse population declines and prevent the need to list this migratory songbird.

The MNF conducts annual breeding bird point count surveys (PCS); these data, along with Breeding Bird Survey (BBS) data, provide us with general information regarding the distribution of breeding birds, including the cerulean warbler (CEWA), across the Forest. Figure WL-6 indicates the general distribution of CEWA observations on the Forest (as compared to the overall distribution of PCS routes on the Forest), with CEWA found primarily in mixed-mesophytic hardwoods and oak forest types.

It is not known how CEWA populations respond to various silvicultural treatments and differing levels of harvest intensity, though studies to date indicate that the species requires some level of heterogeneity within the forest canopy. As such, timber harvesting methods that provide low levels of canopy disturbance may prove to be effective in managing forested habitats for the warbler. In an effort to help develop information on the effects of different harvest techniques on the warbler, the MNF partnered with the USGS (West Virginia Cooperative Fish and Wildlife Research Unit) and West Virginia University on a study to assess the responses (e.g., densities and nesting success) of CEWA populations and other forest bird species to differing levels of timber harvesting intensity. This study is part of a larger effort involving researchers, land managers and NGOs in states throughout the species' breeding range; two other study sites are located in WV on state and private lands.

The study involves pre-treatment, immediate post-treatment and longer-term post-treatment monitoring of CEWA populations responses to differing harvest activities. Harvest treatments, implemented in the fall of 2006, included: 1) reference stand, undisturbed by harvesting, 2) single-tree selection harvest, 3) shelterwood harvest, and 4) regeneration (clearcut) harvest. Post-treatment monitoring began in spring 2007 and continued in 2008-10, with the collection of territory mapping data, nest monitoring, and the collection of habitat metrics.

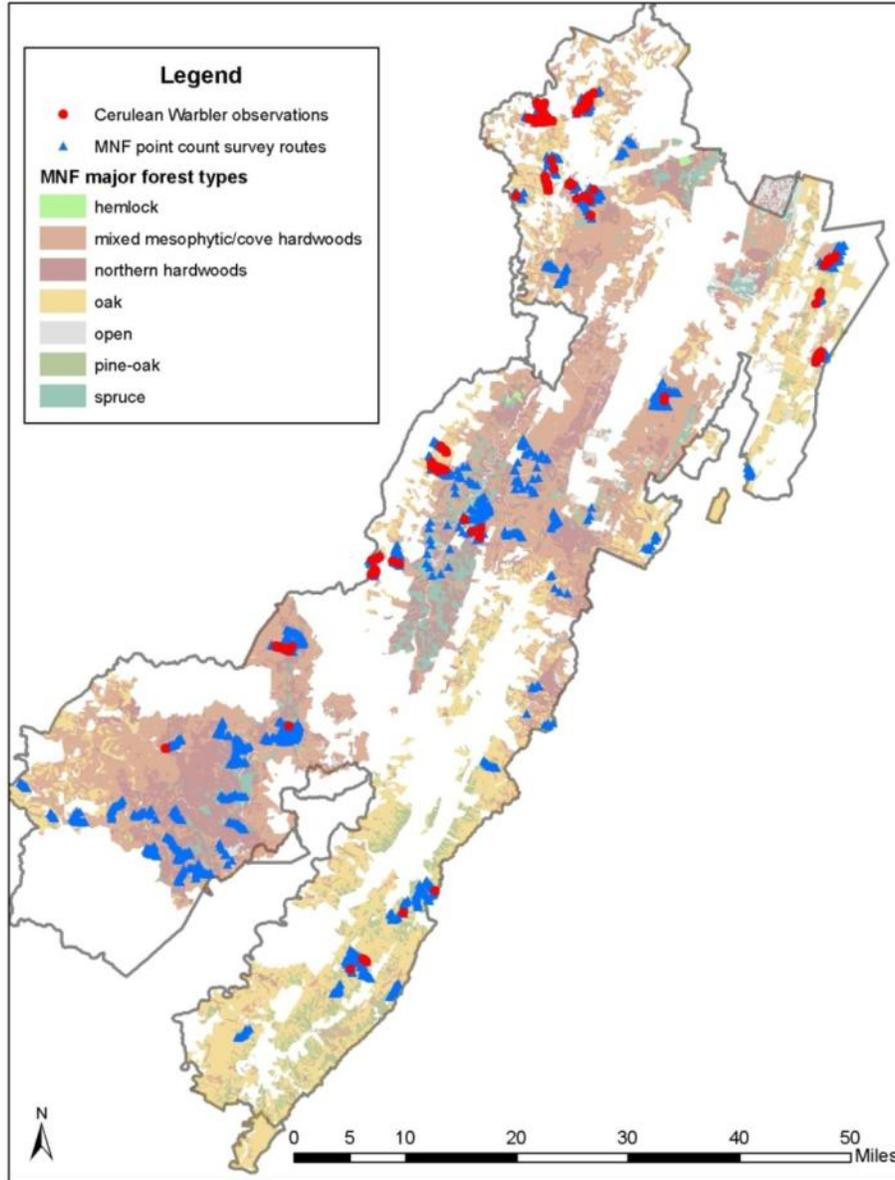


Figure WL-6. Location of point count survey routes and cerulean warbler observations on the Monongahela NF

The greatest, most consistent response of CERW relative to the number of pre-treatment territories across all the WV sites has been in the intermediate treatment. For the MNF, where CEWA territory densities are overall quite low and variable, the increase from zero territories (per 10 ha area) in 2006 to four in 2009 (3.75 in 2010) in the intermediate harvest was the most substantial change observed. Positive CEWA population response was also apparent in the light harvest treatment. Across all study areas in the regional project, significant treatment effects also were noted for overall species richness and edge (guild) species abundance (highest in the heavy harvest treatments). Similar effects were noted for individual species abundance estimates, including the eastern towhee, indigo bunting, brown-headed cowbird, and cedar waxwing.

However, the abundance of several forest interior species (e.g., the ovenbird and black-throated green warbler) was lower in harvested treatments, particularly the heavy harvest.

Data analysis and the production of a Final Report for the MNF and other WV sites will be completed in FY11. Those data also will be incorporated with data from the other four study areas to inform a broader regional analysis. The WV portion of this study already has resulted in the production of several theses and dissertations and other publications, as well as many presentations, providing valuable information regarding the effects of forest management on these and other forest bird species. The portion of the study conducted on the MNF will provide important information regarding local CEWA populations and habitat use on the MNF that can be used by the Forest in planning management to maximize desired habitat conditions for this and associated species in suitable areas.

Evaluation, Conclusions, and Recommendations for the Cerulean Warbler

Data from Forest-wide bird surveys (BBS and PCS) indicate a continued presence of cerulean warblers across the Forest, in both managed and unmanaged areas. Preliminary results of the study described above indicate that some harvest treatments, particularly the “intermediate” shelterwood harvest, appeared to result in increased numbers of cerulean warblers. A point count route established by MNF biologists in the CEWA study area prior to the initial cuts provides additional support for that conclusion. No ceruleans were observed along the route from 2006-2008; however, ceruleans were encountered at two of the points in the vicinity of the shelterwood harvest in 2010 counts.

These findings are similar to those of other studies, which prompted several groups to make preliminary conservation and management recommendations, including maintenance of large, unfragmented tracts of mature deciduous forest of at least 600 acres, and the practice of forest management techniques that result in a broken canopy and open understory. However, given the differences in habitat types used by this species across its breeding range, we await the conclusion of the regional study to make specific recommendations regarding harvest and other management techniques to benefit CEWA populations on the MNF.

REGIONAL FORESTER SENSITIVE SPECIES

The Forest Plan directs that the Forest will provide habitat diversity that supports viable populations of native and desired non-native wildlife and fish species and keeps Regional Forest Sensitive Species (RFSS) from a trend toward federal listing. Thus, RFSS species monitoring should provide information that will lead to a better understanding of the viability of current RFSS populations and how Forest management can or is contributing to the conservation of these species and their habitats.

Monitoring Question 39. To what extent is Forest management contributing to the conservation of sensitive species and maintaining or restoring their habitat conditions?

Terrestrial vertebrate wildlife species currently on the list are shown in Table WL-2. Sensitive species' surveys, project mitigation monitoring, and other data collection are done on an ongoing basis as part of Manual/Handbook and Regional direction. In addition to Forest-wide monitoring that tracks a number of RFSS (e.g., breeding bird surveys and point counts, goshawk surveys,

and bat surveys), project-specific clearance efforts are focused on unique habitats that support many of the Forest's sensitive species (e.g., rock outcrops).

Northern Goshawk, *Accipiter gentilis*.

In addition to being a RFSS, the northern goshawk is a species of concern for the State of WV and the US Fish and Wildlife Service and is considered an indicator of healthy forested habitats. MNF personnel survey for northern goshawks annually to determine if and where the species occurs. That information is used to help manage for the species and its habitat and to protect known locations when making land management decisions. In 2010, MNF biologists inventoried over 9,000 acres for northern goshawks using standardized survey protocol within potential habitat in proposed project areas or watersheds, within high quality habitat elsewhere on the Forest, and in the vicinity of reported sightings from 2009. In addition, all known historic nest sites were surveyed to determine if those nests were currently active. Despite extensive survey efforts, no active nests were found in 2010, making it the third consecutive year without a known active nest site and the 4th year without known successful breeding on the Forest.

Table WL-2. Regional Forester Sensitive Species (FRSS) for the Monongahela NF (vertebrate wildlife species, excluding fish)

Scientific Name	Common Name
Mammals	
<i>Glaucomys sabrinus fuscus</i>	WV northern flying squirrel
<i>Myotis leibii</i>	eastern small-footed bat
<i>Microtus chrotorrhinus caroliniensis</i>	southern rock vole
<i>Neotoma magister</i>	Allegheny woodrat
<i>Sorex palustris punctulatus</i>	southern water shrew
<i>Spilogale putorius</i>	eastern spotted skunk
Birds	
<i>Accipiter gentilis</i>	northern goshawk
<i>Falco peregrinus anatum</i>	American peregrine falcon
<i>Ammodramus henslowii</i>	Henslow's sparrow
<i>Pooecetes gramineus</i>	vesper sparrow
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Lanius ludovicianus migrans</i>	migrant loggerhead shrike
<i>Melanerpes erythrocephalus</i>	red-headed woodpecker
<i>Vermivora chrysoptera</i>	golden-winged warbler
Amphibians	
<i>Aneides aeneus</i>	green salamander
<i>Cryptobranchus alleghensiensis</i>	hellbender
Reptiles	
<i>Glyptemys (Clemmys) insculpta</i>	wood turtle
<i>Crotalus horridus</i>	timber rattlesnake

Golden-winged Warbler, *Vermivora chrysoptera*

The golden-winged warbler (GWWA) is a neotropical migrant that has experienced significant declines across most of its range for over 40 years. These warblers generally breed in patches of early successional habitat with a forest edge. This type of habitat is uncommon on the Forest and is in decline throughout the species' range. In order to better assess the occurrence of existing habitat on the MNF and to determine appropriate management actions, additional point count survey routes were added within range allotments and other early successional habitats.

In addition, the Forest is working with West Virginia University and the WVDNR on a project designed to examine the response of GWWA and other early successional bird species to different management strategies. Potential habitat on the Forest and nearby land was surveyed for GWWAs in 2008 and 2009, with the highest number of birds located on several grazing allotments on the Forest, which were then included as intensive study areas. Allotments were treated with brush hogging and selective tree harvest to open up patches within areas of heavy brush and restore or improve habitat conditions for GWWA (Figure WL-6). Nest searches, mist-netting, and spot-mapping efforts were conducted in these areas from 2008-2010, and nests were monitored throughout each breeding season. General species point count surveys also were conducted annually, and habitat data were taken at varying spatial scales. In addition, genetic samples were taken from adult GWWA captured in mist nets, along with corresponding habitat data. These samples were sent to the Cornell Laboratory of Ornithology for analysis in an attempt to correlate habitat characteristics with levels of introgression for GWWA and blue-winged warblers (BWWA).



Figure WL-6. Creation of patch openings in a GWWA study area on the Monongahela NF; picture on left is immediately after management (2008), picture on right is 2 years later (2010).

Over the three seasons of nest searching, 21 successful GWWA nests were found (~45%), along with 18 depredated (38%) and 8 abandoned (17%) nests. Overall nest success was 45.4%, though success varied considerably by year and site. No nests were trampled by livestock, although the vegetation surrounding two nests was disturbed by cattle and subsequently the nests were depredated. Return rates of banded adults was high with almost 50% of adults recaptured, and almost all adults returning to the same territory in subsequent years. Territory density

averaged 3 males/10 ha of suitable habitat, and declined from ~5.4 in 2008 to 4.7 in 2009 to 3.3 males/10 ha in 2010 at the four sites that were monitored all three years. These decreases in mean territory density were comparable to recent BBS trends in West Virginia, and are not likely a result of habitat management since males have disappeared from both treated (brush-hogging and tree harvest) and untreated areas of study sites.

On point counts at eight of the study sites, 91 bird species were detected from 2008-10. chestnut-sided warblers, field sparrows, and indigo buntings were the most frequently detected species associated with GWWA. Allotments occupied by GWWA and other nongame species also were used by game species; the American woodcock, ruffed grouse, and wild turkey are confirmed breeders on the study allotments, and hooded merganser, northern bobwhite (likely stocked for hunting or dog training), and Wilson's snipe also were observed.

Grazing allotments occupied by GWWA from 2008-10 were 6-180 ha in size. Generally the smaller patches or those with convoluted shapes had higher densities of GWWA, likely because of the proximity of scrub/shrub habitat to a forested edge. Based on the proportion of suitable habitat on 12 allotments studied, approximately 1,000 of the 2,700 ha of grazing allotment on the MNF are potentially suitable habitat for GWWA. Results from vegetation sampling indicated that GWWA territories generally have more woody vegetation cover and higher vegetation density than random plots, with much of the ground covered by grasses, forbs (especially goldenrods), and *Rubus*.

In 2011, research will continue on intensively monitored study sites with populations of golden-wings. If time and funding allows, other sites will be periodically monitored for GWWA and surveyed with point counts. General point count surveys also will continue, with the incorporation of woodcock singing ground counts in 2011. Results from this study and others in the region will provide information to help us determine the best management strategies for range allotments, wildlife openings and other early successional habitats across the Forest to better meet the needs of the GWWA and other bird species. Information on upland game bird demographics, behavior, and the habitats within which they occur, will help to demonstrate that management for golden-wings is beneficial for a variety of birds, including game species.

From a management perspective, GWWA and livestock alike could benefit from creating a more complex, patchy habitat. To maximize benefits to golden-wings, managers should attempt to create a structurally complex and patchy environment within range allotments. Mowing in long straight lines should be avoided because it can potentially diminish habitat complexity and increase nest predation since predators may follow edges in search of prey.

Grazing allotments on the MNF may be of great importance to the conservation of GWWA and other early-successional associates, as they provide a stable source of early successional habitat and isolation from BWWAs, while still providing grazing opportunities for local livestock, thus allowing the Forest Service to accomplish multiple use objectives on those lands. Furthermore, shrubland comprises only about 1.0% of MNF lands and open areas with grasses, forbs, or other herbaceous ground cover comprise about 2.2%, with the remainder forested. Given that the desired vegetation conditions described in the Forest Plan generally call for considerable more early successional habitat than is currently available, particularly in Management Prescriptions

3.0 (Vegetation Diversity) and 6.1 (Wildlife Habitat Emphasis), maintenance, creation and enhancement of early-successional habitat on the Forest to ensure the viability of GWWA and associated non-game and game species should be a priority.

Other RFSS birds

The Forest currently has eight bird species on the list of Regional Forester Sensitive Species, more than any other vertebrate group. While species-specific annual surveys are conducted for the northern goshawk, most of our information for other bird species comes from general breeding bird surveys (point counts and breeding bird survey routes). Point count surveys (PCS) are conducted, among other reasons, to document species habitat use, gather information regarding sensitive species' trends, and assess population responses to habitat management across the Forest. In 2010, 30 point count transect routes were surveyed across the Forest by MNF biologists and contracted ornithologists; the WVDNR conducted additional surveys along routes within the Forest proclamation boundary. These surveys were conducted using standard protocol and data sheets were sent to the WVDNR for inclusion in a statewide database. The location of avian survey routes in undisturbed forested habitat as well as actively managed lands should provide important data for adaptive management on the Forest, particularly in reference to bird species of concern.

Since 1993, over 170 species of breeding birds have been observed on the Forest during point count surveys. Of the eight birds on the RFSS list, four have been detected in point count routes on the Forest, the olive-sided flycatcher, red-headed woodpecker, vesper sparrow, and golden-winged warbler. Unfortunately, the woodpecker has only been detected once on a PCS route (though ancillary observations of red-headed woodpeckers are fairly common across the Forest) and the vesper sparrow has only been detected twice on a single PCS route. However, the vesper sparrow has also been observed on two of the range allotments as part of the GWWA study. The flycatcher was detected as part of a research study on several routes in 1996, but only one of those routes has since been run, and the species has not since been detected there. Golden-winged warblers are also rarely encountered on Forest PCS routes, though the current GWWA study has increased our knowledge of the species' distribution on the MNF. Because of the placement of the vast majority of our point count routes in heavily forested habitats, it is not surprising that these sensitive species were rarely encountered, or that the other sensitive species associated with grasslands and other open habitats were not detected in those counts. In addition to the point count surveys detailed above, MNF personnel, the WVDNR and private groups and individuals have conducted Breeding Bird Survey (BBS) routes and Christmas bird counts on or near National Forest Land. Mist-netting and bird-banding also are conducted at the Allegheny Front Migration Observatory at Dolly Sods on the Cheat-Potomac Ranger District.

Evaluation, Conclusions, and Recommendations for Avian RFSS

Bird survey efforts are, and will continue to be, useful in providing baseline data for development of long-term trend information regarding certain RFSS bird species on the Forest. However, the current PCS routes target fairly common forested habitats on the Forest, while the habitats frequented by several of our RFSS species are less common. Additional routes should be added that target RFSS species' habitats (e.g., early successional habitat, wetlands, and open woodlots); the inclusion of playback calls for some species (e.g., golden-winged warbler) in addition to standard PCS route methodology also would be beneficial. In addition, the short-

term inclusion of more PCS routes within proposed timber management or prescribed burn areas is recommended, including both pre- and post-management survey data collection, to provide information regarding the effects of different types of management on bird communities.

Results to date from the WVU study on Forest range allotments indicate that GWWAs are more common on the Forest than indicated by previous PCS results; the addition of early successional habitat routes as part of our annual survey efforts will allow us to better track this species and other sensitive species using this type of habitat. The GWWA study also indicated that this species should benefit from creating a more open and complex habitat. Thus, it is recommended that management within high-elevation range allotments and other high-elevation Forest openings > ~ 6 acres in size should be implemented to create a structurally complex environment with an abundance of edge habitat. Adaptive management monitoring following such efforts will help us to further refine the best management strategies for these habitats on the Forest.

While many of our sensitive bird species can be reasonably tracked using standard breeding bird surveys (e.g. PCS, BBS and Christmas bird counts), some species require more intensive, species-specific survey and monitoring. Two RFSS examples of this are the peregrine falcon and the northern goshawk. The peregrine falcon has been the subject of much attention in West Virginia, with successful hacking projects at the New River Gorge, and occasional observations in the vicinity of the MNF. The WVDNR organizes an annual survey for peregrine nests in known and suitable cliff habitats. There have been two known nesting sites on the MNF in the last 20 years. In 2010, a pair of peregrines was observed at a cliff on North Fork Mountain near Seneca Rocks, but the pair was not successful in raising young.

The northern goshawk also requires species-specific survey efforts to locate potential nest sites. As noted previously, the MNF conducts goshawk surveys annually using a modification of the USDA Forest Service's 2006 Northern Goshawk Inventory and Monitoring Protocol. The paucity of recent nest activity records on the Forest, despite tracking of historic sites and concerted survey efforts, suggests that the local goshawk population may be at a low ebb. This could be the result of cyclic population fluctuations, or may be indicative of a more serious situation resulting in contraction of the species range in the northeast. Continued long-term monitoring of local and regional populations should provide better insight into whether populations are indeed trending downward and, if so, what the potential causal factors might be. The Forest will continue its annual monitoring efforts and outreach to the public for information on observations of this species. Meanwhile, efforts to conserve and restore large expanses of spruce and spruce-hardwood forest types on the forest should benefit the goshawk and other high elevation, forest interior species on the MNF.

Non-avian RFSS

Many of the non-avian sensitive species on the Forest are associated with rocky outcrop and ledge or talus habitats. The small-footed bat is addressed as part of the forest-wide bat survey effort (described in the TEP bat species section above); however, the green salamander, timber rattlesnake, Allegheny woodrat, and southern rock vole also use these rocky habitats and are not currently part of a Forest-wide inventory effort. As a result, a special attempt is made to locate and survey these discrete habitats as part of clearance surveys associated with planned management activities or other proposed projects.

Given logistic and financial constraints, it is virtually impossible to target Forest-wide surveys for all RFSS on the MNF, though many species are encompassed as part of our breeding bird and bat surveys. As a result, we have very little data regarding the distribution and abundance of many RFSS; without such data it is very difficult to make assessments as to whether a project will affect some of these species and, if so, to what extent. Project-related clearance surveys provide our best opportunity to collect distributional data for many of the species not targeted by Forest-wide efforts. These surveys should be conducted in as quantitative and consistent a manner as possible, targeting habitats such as rock outcrops and riparian zones to search for RFSS. Thus, it is recommended that a Forest-wide wildlife survey and monitoring protocol be developed for the Forest for use in individual project and watershed assessments, as well as ancillary survey efforts completed across the MNF.

SUMMARY

The Monongahela Wildlife Group will continue to monitor wildlife species and their habitats on the Forest in accordance with Federal and State Laws, Forest Service policies, and Forest Plan direction. Most of the monitoring projects noted above will continue, despite challenges posed by decreasing budgets. There is a clear need to continue existing monitoring efforts, particularly for species groups such as bats, which are experiencing widespread threats. In addition, some survey efforts should be started for RFSS species with little or no current data (e.g., some amphibian and small mammal species and birds whose primary habitat is not forested habitat) in order to gain information regarding species habitats and life histories and the potential effects that Forest management activities may have on them.