Biological Evaluation
for
"Adjustments to Management and Improvements on Four Grazing Areas"
Monongahela National Forest

Introduction

The purpose of this biological evaluation is to document the effects of the Proposed Action/Preferred Alternative to federally endangered, threatened or proposed, and Monongahela National Forest sensitive, species. It also makes determinations on what effects the Proposed Action could have to endangered, threatened, proposed, or sensitive species, and if the Proposed Action would lead to the loss of viability, or a trend toward federal listing, of any of the Monongahela National Forest sensitive species.

This document supplements and tiers to the Environmental Assessment (EA) titled "Adjustments to Management and Improvements on Four Grazing Areas". It also tiers to the Revised Biological Assessment for Threatened and Endangered Species on the Monongahela National Forest (USDA, FS, September, 2001), as well as the Environmental Assessment for the Proposed, Threatened and Endangered Species Amendment to the Monongahela National Forest Land and Resource Management Plan (Monongahela National Forest, January, 2003)

For information about the Proposed (Federal) Action, see the EA, pages 9-12.

Threatened, endangered and sensitive species (TES) that "occur" or are "likely to occur" in the project areas.

At the present time there are no federally "proposed" species that pertain to the Monongahela National Forest.

To determine which TES species "occur" or are "likely to occur" in the four proposed project areas several types of information were utilized. Types of information used include: 1.) on the ground knowledge of the four project areas, 2.) information about the habitat of each species, 3.) information about the distribution of each species on, and in the vicinity of, the National Forest, and 4.) knowledge of the proposed activities proposed for implementation in the proposed project areas.

The Likelihood of Occurrence (LOO) table starting on page 19 identifies each threatened or endangered species known to occur on the Monongahela National Forest (MNF), and each of the sensitive species that are known to occur on the MNF. This LOO table reflects the species on the Region 9 Regional Forester's Threatened, Endangered, Proposed and Sensitive Species list that are relevant to the Monongahela National Forest. Information such as the US Fish and Wildlife Service list of Threatened, Endangered and Proposed species for the state of West Virginia, as well as information from the WV

DNR, Wildlife Diversity/Natural Heritage Program, were used in developing the Monongahela National Forest portion of the Regional Forester's Sensitive Species list.

The LOO table provides information on the scientific name of each species as well as its ranking. The table also briefly describes the habitat and local distribution of each of these TES species. The column entitled "Likelihood of Occurrence" in the LOO table indicates the determination that was made as to which species are unlikely to occur in the proposed project areas, and which species are known to occur, or are likely to occur, in the project areas. The "Likelihood of Occurrence" column also provides a brief reason/s for these determinations.

The term "likely to occur, in, or nearby the proposed project areas", is used in this document because the species to be discussed in detail includes bats and aquatic species. Bats are flying mammals which are very mobile. Fish can move up and down stream within their creek or river habitat. Aquatic species such as fish or mussels may not be known from within a project area but waters that flow from a project area continue downstream where these species are likely to occur. Sediment and nutrients/pollution that may leave a project area due to activities occurring there can affect these downstream aquatic species.

No threatened or proposed species were determined "likely to occur" in the proposed project areas.

Based on the LOO table the following endangered and sensitive species were determined "likely to occur, in, or nearby, the proposed project areas".

Endangered Species	Determination of Occurrence, in, or nearby, the project areas
Indiana bat	Likely to occur
Virginia big-eared bat	Likely to occur

Sensitive Species	Determination of Occurrence, in, or nearby, the project areas
Eastern small footed bat	Likely to occur
Northern Goshawk	Likely to occur
Hellbender	Likely to occur
Candy Darter	Likely to occur
New River Shiner	Likely to occur
Appalachian Darter	Likely to occur
Kanawha Minnow	Likely to occur
Cheat Minnow	Likely to occur
Elktoe	Likely to occur
Green Floater	Likely to occur

Darlington's spurge	Likely to occur

Each of these endangered or sensitive species above will be carried forward and discussed in further detail in this biological evaluation. Effects from the Proposed Action to these species will be discussed and a determination as to the significance of the effects to these species will be made.

T and E species

A review of the Forest's threatened and endangered species known location records indicate there are no known T and E sites within, or near, any of the four proposed project areas (grazing areas).

Indiana bat

The determination that Indiana bats are "likely to occur" in or nearby the project areas was made by conducting a spatial analysis using the Forest's Geographical Information System (GIS). It has been determined that the maximum distance non-migratory male Indiana bats, will forage/fly from their hibernacula is approximately five miles (USFS, 2001, Revised BA, pg. 45). The area within a five mile radius of a Indiana bat hibernacula is considered to be the "Area of Influence" where Indiana bat foraging, roosting and swarming is likely to occur. Despite quite extensive surveys there is no documentation at the present time that female Indiana bats, or their summer maternity colonies, occur on the MNF during the non-hibernation period (USFS, 2001, Revised BA, pg. 44, 45). The GIS analysis determined that the Rimel and the Allegheny Battlefield Allotments, and the Callison/Clark Tract are not within five miles of any caves known to be occupied by Indiana bats. Therefore, as documented in the Monongahela National Forest's Forest Plan Amendment for Threatened and Endangered Species, there should be no adverse effects to Indiana bats from the Proposed Action from these three project areas.

The GIS analysis determined that the Queens Allotment is within five miles of two different Indiana bat hibernacula. These hibernacula are Two Lick Run cave and Big Springs cave. Two Lick Run cave is approximately two miles from the Queens Allotment. Big Springs cave is approximately three miles from the Queens allotment. The latest winter survey of February 1st, 2002 of Two Lick Run cave recorded seven Indiana bats. A survey of Big Springs cave in the winter of 2002-2003 indicated that 199 Indiana bats were hibernating in the cave. The Shavers Fork River flows outside and to the west of the Queens Allotment. The Queens allotment also contains an approximately 10 acre wetland. Indiana bats most likely forage in upland forests, over riparian areas, and wetlands, so it is feasible that some Indiana bats (primarily males) could be flying or foraging over or around the Queens allotment from these two hibernacula some time during their non-hibernating period. Therefore, it was concluded that Indiana bats are "likely to occur" in the Queens Allotment.

Mist net surveys for endangered bats (Indiana and Virginia big-eared bats) were not conducted in or around the Queens allotment because mist netting should not be conducted within a 5 mile radius of an Indiana bat hibernacula. Based on studies there occurrence within that area is assumed (US FWS, 2002, Biological Opinion, pg. D-22).

Proposed activities on the Queens Allotment, such as fencing riparian areas, fencing the portion of the allotment within the floodplain of the Shaver's Fork, fencing the wetland, and restoration of the wetland, are all considered to improve habitat for the Indiana bat. Under the Proposed Action these areas would be excluded from the proposed re-initiation of grazing and undisturbed growth of riparian vegetation would occur in these areas. Along with the grazed portion of the allotment, these areas would provide habitat for the production of terrestrial and/or aquatic flying insects (USFS, Revised BA, pg. 41, 57). Indiana bats could then forage over this combination of grazed and un-grazed insect production areas (US FWS, Biological Opinion, pg. D-11, D-14-15).

The forested edge around the Queens Allotment, as well as the individual, clumps and corridors of larger trees within the allotment, also provide potential foraging and roosting habitat for the Indiana bat (USFS, 2001, Revised BA, pg. 43/US FWS, Biological Opinion, pg. D-14). Under the Proposed Action, these trees would not be removed.

All of the four proposed project areas were non-forested pasture land prior to their acquisition by the Forest Service and have been open, non-forested habitat for many years. The Proposed Action does not propose to create any additional non-forested habitat.

The Revised Biological Assessment for Threatened and Endangered Species on the MNF concluded that the range/grazing program on the MNF will not directly affect the Indiana bat and a may affect, not likely to adversely affect determination was reached for the MNF range program and the Indiana bat (USFS, Revised BA, pg. 57, 60).

The five-mile radius around Indiana bat hibernacula applies to the cutting of trees greater than five inches dbh (diameter at breast height) (MNF, Forest Plan Amend. #6, pg. 233b). These are trees that Indiana bats might roost in during rest periods during night time foraging, or during the day when not foraging. For there to be a potentially negative impact to the Indiana bat trees greater than five inches dbh would need to be cut within five-miles of these two hibernacula. Because the Proposed Action does not propose the cutting of any trees over five inches in diameter on any of the proposed project areas, there should be no adverse effects to Indiana bat roosting, foraging, or swarming habitat from implementation of this alternative.

The herbaceous, non-forested habitat in the Queens allotment provides habitat for the production of additional insect species and numbers that are not produced by the predominantly woodland habitats within the area of influence. Insect availability from herbaceous habitat differs in time of year than insect availability from wooded habitats. Insects produced by the herbaceous habitat that the Queens Allotment provides helps

supplement the potential food supply for Indiana bats (USFS, Revised BA, pg 57). The Queens allotment diversifies the habitat for Indiana bat use within the area of influence.

Proposed activities at the Queens Allotment, such as the creation of a new water development, repairing or reconstructing barbed wire fences, cutting noxious weeds and/or brush, etc. are considered to not have adverse effects to the Indiana bat. None of these activities would remove potential roost trees. Indiana bats may chose to drink from the proposed new water trough. Barbed wire farm fences are not considered to be a barrier to Indiana bat movement. Indiana bats do not roost in noxious weeds or shrubs proposed for cutting.

The proposed use of an herbicide to control non-native, invasive, noxious weeds/brush within the Queens Allotment should not have any significant adverse effects to Indiana bats. Indiana bats do not roost in weeds or in the shrubs, such as autumn olive or multi-flora rose, proposed for control with herbicide. If left un-controlled, monocultures of noxious, non-native invasive species are likely to develop and spread. This can be detrimental to the habitat of the Indiana bat because vegetation that produces insects for bat food will be made up of a greater percentage of foreign plant species and will be less diverse.

As discussed in the EA section on herbicides (pages 52-56), when properly applied, Rodeo, a form of glyphosate, is of low toxicity to humans and wildlife. The oral LD (lethal dose) 50 for the Rodeo form of glyphosate is >5,000mg/kg. This means that the dose of Rodeo needed to kill 50% of a test animal population is > 5,000 mg of glyphosate per one kg of test animal body weight. Rodeo, which contains almost 50% water, will be mixed with additional water before application and further diluted. This further reduces the concentration of active ingredient applied to target plants. Rodeo is a plant growth inhibitor and is not an insecticide. A ¾% solution of Rodeo is proposed for use. This is created by adding 1 fluid ounce (or two tablespoons) of Rodeo (already 46.5% water) to one gallon of water. This rate is much lower (40%) than the maximum rate allowed by the label of 7.5 pints/acre. There is no evidence that glyphosate is carcinogenic or mutagenic. Rodeo is not likely to adversely affect the food of the Indiana bat. Only individual plant or spot treatments would be conducted. No broadcast or aerial applications of herbicide would occur. It is very unlikely that herbicide applied to selected plants would contaminate large numbers of nocturnal flying insect that would later be eaten by an Indiana bat. And even if an Indiana bat did forage in an area in which individual noxious/non-native invasive plants had been sprayed with an herbicide and some nocturnal flying insects received spray, huge numbers of insects that received the herbicide spray would have to be eaten by the same bat in a short period of time before it could significantly affect the bat. The herbicide is applied during the day when bats are inactive, is absorbed by the plant it is applied to, and significant numbers of flying nocturnal insects are unlikely to be sprayed by the herbicide spray. Herbicide treatment of noxious/non-native invasive species on the Queens allotment would only take a few days at most. Potential exposure of Indiana bats to flying insects that may have received herbicide spray would be very limited.

Similar to the herbicide, the colorant (Bullseye) and the non-ionic surfactant (Sun Wet), proposed for addition to the herbicide spray, is concluded to not significantly adversely effect the Indiana bat. The colorant is water-soluble, biodegradable and non-staining. The colorants label contains no hazard symbols and there are no indications of danger in using this product. One half ounce or less of the colorant will be used per gallon of spray mixture. The surfactant consists of methylated sunflowerseed oil and emulsifiers. It is not listed as a carcinogen and OSHA classifies this spray adjuvant as non-hazardous. The label recommends using 1.5 pints to 2 quarts for each acre sprayed. As discussed in the EA/mitigation measures the surfactant will not be used in the spray mix when spraying non-native invasive brush and weeds within 50 feet of open water. Because the 50 acre Queens allotment contains an approximately 10 acre wetland and additional riparian areas, and because targeted noxious, non-native invasive weeds and shrubs are scattered around the allotment, very little colorant or surfactant will be applied to the allotment. The chance of the colorant or surfactant getting onto nocturnal flying insects that later may be eaten by an Indiana bat in sufficient quantities to harm the bat is considered extremely low.

The Revised Biological Assessment for T and E species on the MNF concluded that the use of insecticides, such as dimilin, B.t, and Gypchek for control of gypsy moths may affect, but is not likely to adversely affect the Indiana bat (USFS, Revised BA, pg. 55 and 60). Rodeo/glyphosate is a herbicide and is not an insecticide. Therefore its proposed use on proposed project areas, such as on the Queens Allotment, to control noxious/non-native invasive weeds and brush should have even less effects to Indiana bats.

Virginia big-eared bat

A similar GIS spatial analysis as was conducted for the Indiana bat was also completed for the Virginia big-eared bat (VBEB). The location of VBEB caves (both summer bachelor and maternity colonies, and winter hibernacula) were mapped in relation to the four proposed project areas. Telemetry and light tagging studies of VBEB in West Virginia by the West Virginia Division of Natural Resources have shown that the VBEB may forage up to six miles from its cave (USFS, 2001, Revised BA, pg. 64). The Rimel and Allegheny Battlefield Allotments, and the Callison/Clark Tract, are all more than six miles from a VBEB cave. There should be no adverse effects to the VBEB from implementation of any of the actions proposed in the Proposed Action at these three project areas.

However, the Queens Allotment was determined to occur within six miles of Big Springs cave, a known VBEB cave. Big Springs cave is approximately three miles from the Queens Allotment. This cave is a hibernacula for mostly Indiana bats, and a few VBEB. It is not a summer colony site for VBEB. In the winter of 2002-2003 a survey indicated that two VBEB were hibernating in Big Springs cave.

Proposed activities on the Queens Allotment, such as fencing riparian areas, fencing the portion of the allotment within the floodplain of the Shaver's Fork, fencing the wetland, and restoration of the wetland, are all considered to increase habitat capability for the

VBEB. If grazing would be re-initiated on the Queens Allotment, these areas would be excluded from grazing and undisturbed growth of riparian vegetation would occur in these areas. These areas would provide un-grazed habitat for the production of moths and other nocturnal flying insects. VBEB could forage over these un-grazed insect production areas.

VBEB studies indicate that, in addition to using wooded areas, VBEB use non-forested areas such as grazed old fields, un-mowed hayfields and cropland for foraging (USFS, 2001, Revised BA, pg. 63, 64, 67). The herbaceous, non-forested habitat that the Queens allotment contains provides habitat for the production of additional moth and other nocturnal flying insect species and numbers that are not produced by the predominantly wooded habitat around the cave. Flying insect availability from herbaceous habitat is different in time of year than insect availability from wooded habitats. Moths and other nocturnal flying insects produced by the herbaceous habitat of the Queens Allotment helps supplement the potential food supply for the VBEB.

Maintaining the Queens allotment in a non-forested condition through a combination of; seasonal grazing; control of noxious, non-native invasive weeds and brush with herbicide; and mowing/cutting invading weeds and brush; as proposed in the Proposed Action, will help maintain this important habitat type for foraging by VBEB.

All of the four proposed project areas were non-forested pasture land prior to their acquisition by the Forest Service and have been open, non-forested habitat for many years. The Proposed Action does not propose to create any additional non-forested habitat.

The Revised Biological Assessment for Threatened and Endangered Species on the MNF concluded that continuing grazing on MNF grazing allotments will benefit the VBEB since it forages over openings and grazing helps maintain these areas in a non-forested condition. The Revised BA also concluded a may affect, not likely to adversely affect determination for the MNF range/grazing program and the VBEB (USFS, 2001, Revised BA, pg. 74, 76).

The proposed use of an herbicide to control non-native, invasive, noxious weeds/brush on the Queens Allotment should not have any significant adverse effects to VBEB. VBEB primarily eat moths and do not roost in weeds or in shrubs, such as autumn olive or multi-flora rose, proposed for control with herbicide. If left un-controlled, monocultures of noxious, non-native invasive species are likely to develop and spread on the Queens Allotment. This can be detrimental to the habitat of the VBEB because vegetation that produces insects for bat food will be made up of a greater percentage of foreign plant species and will be less diverse.

As discussed in the EA section on herbicides (pages 52-56), Rodeo is of low toxicity to humans and wildlife. The oral LD (lethal dose) 50 for the Rodeo form of glyphosate is >5,000mg/kg. This means that the dose of Rodeo needed to kill 50% of a test animal population is > 5,000 mg of glyphosate per one kg of test animal body weight. Rodeo,

which contains almost 50% water, will be mixed with additional water before application and further diluted. This further reduces the concentration of active ingredient applied to target plants. Rodeo is a plant growth inhibitor and is not an insecticide. A ¾ percent solution of Rodeo is proposed for use. This is created by adding 1 fluid ounce (or two tablespoons) of Rodeo (already 46.5% water) to one gallon of water. This rate is much lower (40%) than the maximum rate allowed by the label of 7.5 pints/acre. There is no evidence that glyphosate is carcinogenic or mutagenic. Rodeo is not likely to adversely affect the food of the VBEB. Only individual plant or spot treatments would be conducted. No broadcast or aerial applications of herbicide would occur. It is very unlikely that herbicide applied to selected plants would contaminate large numbers of moths, or other nocturnal flying insects, that would later be eaten by a VBEB. And even if an VBEB did forage in an area in which individual noxious, non-native invasive plants had been sprayed with an herbicide and some moths or other nocturnal flying insects received spray, huge numbers of insects that received the herbicide spray would have to be eaten by the same bat in a short period of time before it could significantly affect the bat. The herbicide would be applied during the day when bats are not active, is absorbed by the plant it is applied to, and significant numbers of moths and other flying nocturnal insects are unlikely to be sprayed by the herbicide spray. Herbicide treatment of noxious/non-native invasive species on the Queens allotment would only take a few days at most. Potential exposure of VBEB to flying insects that may have received herbicide spray would be very limited.

The Revised Biological Assessment for T and E species on the MNF concluded that the use of insecticides, such as dimilin, B.t, and Gypchek for control of gypsy moths may affect, but is not likely to adversely affect, the VBEB (USFS, 2001 Revised BA, pg. 72 and 76). Rodeo is an herbicide and is not an insecticide. Therefore its proposed use on proposed project areas, such as on the Queens Allotment, to control noxious/non-native invasive weeds and brush should have even less effects to VBEB.

Similar to the herbicide, the colorant (Bullseye) and the non-ionic surfactant (Sun Wet), proposed for addition to the herbicide spray, is concluded to not significantly adversely effect the VBEB. The colorant is water-soluble, biodegradable and non-staining. The colorants label contains no hazard symbols and there are no indications of danger in using this product. One half ounce or less of the colorant will be used per gallon of spray mixture. The surfactant consists of methylated sunflower seed oil and emulsifiers. It is not listed as a carcinogen and OSHA classifies this spray adjuvant as non-hazardous. The label recommends using 1.5 pints to 2 quarts for each acre sprayed. As discussed in the EA/mitigation measures the surfactant will not be used in the spray mix when spraying non-native invasive brush and weeds within 50 feet of open water. Because the 50 acre Queens allotment contains an approximately 10 acre wetland and additional riparian areas, and because targeted noxious, non-native invasive weeds and shrubs are scattered around the allotment, very little colorant or surfactant will actually be applied to the allotment. The chance of the colorant or surfactant getting onto moths and other nocturnal flying insects that later may be eaten by a VBEB in sufficient quantities to harm the bat is considered to be extremely low.

The edge around the allotment, the fruit trees within it, and the individual, clumps and corridors of trees within the allotment all provide potential foraging habitat for the VBEB. (USFS, 2001, Revised BA, pg. 67).

Proposed activities, such as the creation of a new water development (USFS, 2001, Revised BA, pg. 73), repairing, constructing, or reconstructing barbed wire fences, cutting noxious weeds and/or brush, etc. are not considered to be detrimental to the VBEB. None of these activities would remove potential roost trees. VBEB may chose to drink from the proposed new water trough. Barbed wire farm fences are not considered to be a barrier to VBEB movement. VBEB do not roost in noxious weeds or shrubs proposed for cutting.

Cerulean Warbler

The US Fish and Wildlife Service have recently received a petition to consider the listing of the cerulean warbler. This warbler is listed as a sensitive species on some National Forests within Region 9. The cerulean warbler inhabits mature deciduous forests. Its use of openings and edge requires further study. This species is considered locally common on the Monongahela National Forest, but it is more abundant along the Ohio River in the western part of the state. Because the MNF and the state of West Virginia are heavily forested they are considered a population source for this species. A risk evaluation was completed for this species and is available at the MNF Supervisors Office. This risk evaluation concluded that there was no need to include the cerulean warbler as a R9 Sensitive Species for the MNF. The proposed project areas are primarily herbaceous, non-forested areas that have been in this condition for many years. The Proposed Action does not propose to create additional acreage of non-forest habitat. Consequently, effects to this species will not be analyzed in detail in this report. Also see page 58 of the EA.

Sensitive Species

A review of the Forest's sensitive species known location records indicate there are no known sensitive species locations within any of the four proposed project areas. During development of the Likelihood of Occurrence table it was determined that the eastern small-footed bat and the northern goshawk, both very mobile species that can use large areas of habitat, are "likely to occur" in or around some of the proposed project areas. In addition, some sensitive aquatic fish and mollusk species are known to occur in streams down steam of proposed project areas that could be indirectly affected by range activities proposed on one or more of the four allotments.

Eastern small-footed bat

Compared to several other wildlife species there is a scarcity of information about this sensitive species. This species hibernates in caves. Its summer roosts and maternity sites include buildings, caves, tree cavities, rock crevices, tunnels or under bridges. Although there are no buildings, caves, or tunnels in the proposed project areas, the Queens

allotment does contain a small, old wooden bridge. There is also a highway bridge over Anthony Creek close to the Callison/Clark Tract. The Allegheny Battlefield Allotment contains some old civil war rock chimney mounds and rock piles from when settlers cleared rocks from these fields. There is also a highway bridge over Laurel creek in the vicinity of the Rimel Allotment. The allotments do contain some larger trees that may contain tree cavities. As a flying mammal this species is very mobile and can utilize a large area during its nighttime foraging. Mist netting survey records indicate that a small-footed bat was captured 3.1 miles north of the Callison/Clark Tract. Therefore, because there are potential summer roosts and/or maternity sites in the vicinity of most of the proposed project areas (that have not been surveyed for use by this specific species), and because this species of bat could include some or all of the proposed project areas within its foraging/activity areas, it was concluded the species is "likely to occur".

It appears that this species is often found in the vicinity of areas containing rock outcrops, cliffs and talus slopes. None of these habitat components are known from inside or nearby the proposed project areas.

This species forages over ponds and streams. Habitat is mostly hilly or mountainous areas, in or near deciduous or evergreen forests, sometimes in mostly open farmland (NatureServe, 2003, Eastern Small-footed Myotis, pg 7). Tuttle (1964) reported two individuals found in April in Tennessee under a large flat rock at the edge of a quarry surrounded by woods and cow pastures (NatureServe, 2003, East. Small-footed Myotis, pg 7). It appears that this species can occur in areas that are a mixture of non-forested and forested areas. Therefore the proposed project areas, which were cleared for pasture or cropland many years ago, and continue to provide herbaceous open land today, are likely to assist in providing a diversity of habitat types and resulting insect species for the eastern-small footed bat to forage on. The Proposed Action, to maintain these areas in a non-forested condition through grazing, mowing, and the use of a herbicide to selectively control noxious, non-native, invasive species of weeds and shrubs, should not adversely affect this species or its habitat.

The Rimel Allotment contains two ponds which, except for a ramp where livestock can travel down to water, are fenced from livestock grazing. Cockran Creek that flow through this allotment is also fenced from livestock grazing. The Queens Allotment contains a wetland and riparian areas that in the Proposed Action are proposed for fencing. The Allegheny Battlefield Allotment contains a spring and a small wetland below it that is currently fenced out. All these livestock watering sources within the proposed project areas provide potential foraging areas for this species.

In the event that this species does indeed occur there, the proposal to construct a small pond on the west side of the Allegheny Battlefield Allotment would provide an additional, new, foraging area for this species. Streams that run nearby but outside the four proposed project areas, such as the Shavers Fork, Laurel Creek, Anthony Creek, and the North Fork of Anthony Creek, are all fenced out from grazing, and also provide un-grazed, potential foraging habitat for this species.

Similarly, as discussed under the sections on the Indiana bat and the Virginia big-eared bat, the proposed use of the herbicide Rodeo/glyphosate to control noxious, non-native invasive weeds and shrubs on these four project areas, is also considered to not adversely affect the small-footed bat. Very similar logic, information and conclusions apply for the proposed use of herbicide and the small-footed bat as it does for the Indiana bat and the VBEB. This discussion will not be provided again, here.

It is concluded that implementation of the Proposed Action would not likely to lead to a loss of viability or a trend toward federal listing of this species.

Northern Goshawk

A GIS analysis of the known locations of past goshawk nest sites from in and around the MNF in relation to the four proposed project areas was conducted. This analysis revealed that the closest known goshawk nest site to any of the proposed project areas was 9.3 miles. However, similar to bat species, this raptor species is very mobile and can have a large home range. Nest sites can move from year to year and not every nest site is known. Therefore, it was concluded that the goshawk is "likely to occur" in or around the proposed project areas.

The MNF and the state of West Virginia are in the southern extent of this species range. The number of nesting pairs on the Forest fluctuates from year to year. Some years, there are no known active nests, no new nests are located on the Forest and nests known from previous years may be inactive or abandoned. In other years, new nests are established and found, or nest sites from previous years may be re-activated. Knowing of two or three active goshawk nests on the Forest and in the state in any one year is considered a excellent year for goshawk sightings/reproduction. The goshawk population in the eastern US fluctuate with, and lag behind, the quantity of its prey base in the core of its range (farther north and west of West Virginia). When prey species such as snowshoe hare and ruffed grouse are plentiful up north, this leads to more successful nesting and more production of goshawk young. Due to the territorial nature of this species, and the fact that not all habitat is suitable for nesting, the following year these young often cannot find suitable nesting sites within the core of its range because most nesting territories are already occupied by older established pairs, and are forced to move to the fringes of its range to find mates and establish nesting sites. This is when goshawks attempt to nest on the MNF and in WV.

Since this species usually nests in larger tracts of forest in a tree greater than 12 inches dbh, and because the proposed project areas are primarily non-forested, it is very unlikely that the proposed project areas would be used as nest sites.

Although the goshawk is primarily a woodland species, this species uses a variety of forest types, structural conditions and successional stages for foraging. In the event that a individual goshawk or a goshawk pair were to establish a home range or a nest site in the vicinity of one of the proposed project areas they could use the non-forested area and the edge around it that the allotment provides as part of their more extensive foraging area.

Some prey species used by the goshawk, such as ruffed grouse, cottontail rabbits, snowshoe hare, wild turkey poults, various species of songbirds, young groundhogs and other small mammals, benefit from the habitat that the grazing areas provide. These species are often found in greater abundance in and around these non-forested, herbaceous habitats. Grazing allotments provide a greater diversity of habitat types and prey species for the goshawk to forage on.

None of the actions proposed in the Proposed Action are considered to be detrimental to the Northern Goshawk. It is concluded that implementation of the Proposed Action is not likely to lead to a loss of viability or to a trend toward federal listing for the goshawk.

Aquatic species

This section will discuss potential effects to aquatic species from the Proposed Action. Aquatic species to be discussed include the Hellbender, Candy Darter, New River Shiner, Appalachian Darter, Kanawha Minnow, Cheat Minnow, Elktoe, and the Green Floater. These species are all discussed in the same section because they all live in creeks, streams, or rivers and all can potentially be affected by changes in water quality, sediment, and nutrients/pollution from implementation of the Proposed Action.

The hellbender was determined "likely to occur" from the standpoint that it occurs in the cool, clear, larger, permanent streams of the Ohio River drainage. Waters from all four project areas flow into creeks or streams that make up the Ohio River drainage. Therefore, activities on the four project areas could indirectly affect habitat for the hellbender by affecting water quality, sediment and nutrients/pollution downstream where hellbenders may occur.

There are no larger, unfenced perennial streams within any of the four proposed project areas.

Grazing management activities that have already been implemented in the past on the four project areas, such as the fencing out of Cochran creek on the Rimel Allotment, the fencing out of the spring and associated wetland on the Allegheny Battlefield Allotment, or the rotational grazing on the Rimel Allotment are already contributing to the maintenance and/or improvement of the water quality, and in reducing sediment and nutrients/pollution, to water resources of the Ohio River drainage.

Many of the actions and mitigation measures that would be carried out under the Proposed Action would further protect and improve water resources of the Ohio River drainage and for the hellbender.

Examples of these actions and mitigation measures include:

a. fencing out the wetland and riparian areas on the Queens allotment
b. restoring the wetland on the Queens allotment
c. implementing rotational grazing on the Allegheny Battlefield Allotment and re-initiating rotational grazing on the Callison/Clark Tract

d. using a herbicide approved by the Environmental Protection Agency for use in water for noxious/non-native invasive species control
e. not using a surfactant in the spray mix when treating noxious/non-native invasive weeds or brush growing within 50 feet of surface waters
f. fencing two close-by springs and developing a new livestock watering facility on the east side of the Allegheny Battlefield allotment.
g. moving a portion of the boundary fence farther away from Anthony Creek on the Callsion/Clark tract.
h. monitoring the wooded riparian area on the east side of the Allegheny Battlefield Allotment and fencing out this wooded riparian area if monitoring indicates significant adverse effects from livestock use.

The Candy darter, New River shiner, Appalachian darter and the Kanawha minnow, were all determined "likely to occcur" from the standpoint that waters from the Rimel, Callison/Clark Tract, and/or the Allegheny Battlefield Allotment flow into streams that may contain, or which flow into larger streams downstream, such as the East Fork of the Greenbrier River or the main Greenbrier River, that may contain these species.

Similarly, as used in the discussion of the hellbender, examples c, d, e, f, g and h above would help protect water resources for these four sensitive species of fish by reducing the potential for adverse effects from the proposed action.

Waters that flow from the Queens Allotment do not flow into streams inhabited by these four sensitive fish species.

Potential effects to the Kanawha minnow are only associated with activities proposed on the Allegheny Battlefield Allotment. Waters from the Allegheny Battlefield Allotment flows into the Little River, and eventually into the East Fork of the Greenbrier River, where this species is known to occur. Farther downstream in the main stem of the Greenbrier River, in the vicinity of where water from the Rimel or Callison/Clark tract enters the Greenbrier River, there are no known populations of Kanawha minnows.

Activities proposed for the Allegheny Battlefield Allotment, such as the initiation of rotational grazing, the fencing out of two nearby springs, the development of a new livestock watering facility, and the maintenance of roads leading to and within the allotment, are all considered to be actions that will reduce sediment and nutrients/pollution to waters that flow off this area that may eventually reach the East Fork of the Greenbrier River by first flowing through the Little River. The fencing out of the two nearby springs and the development of a new livestock watering facility in the east part of the allotment will help reduce livestock use of an un-named wooded, intermittent drain that heads up in this allotment and makes up a part of the very headwaters of Little River. Attracting livestock away from this wooded drain by providing livestock water uphill from it would reduce the chances of bank shearing, the grazing of riparian vegetation, and excretion in or near this drain, by livestock. The proposed monitoring of this drain, and the proposal to fence out this drain if monitoring indicates significant adverse effects to the drain from livestock occupation, would also

help to ensure waters flowing from the allotment into the Little River and on into the East Fork of the Greenbrier River will be of higher quality compared to the present. This should assist in maintaining or improving the water quality for the Kanawha minnow and other sensitive aquatic species downstream of this allotment.

Grazing management activities already in place, such as the fencing out of Cockran Creek on the Rimel Allotment, have in the past, and will continue to, protect water resources for the Candy darter, the New River shiner and the Appalachian darter.

The Cheat minnow was determined “likely to occur” from the standpoint that it “may occur” in the Shavers Fork River. The Queens Allotment/project area lies just east of the Shavers Fork River and waters from this allotment flow into the Shavers Fork.

Activities proposed for the Queens Allotment in the Proposed Action are considered to be beneficial to the waters of the Shavers Fork and the Cheat minnow. Such proposed activities as fencing the wetland, restoring the wetland, fencing the riparian areas, excluding a portion of the allotment that is currently in the floodplain of the Shavers Fork, and developing a new livestock watering facility, are all viewed as activities that will reduce the potential that sediment and nutrients/pollution from the proposed re-initiation of livestock grazing on this allotment will enter the Shavers Fork. Therefore the water quality of the Shavers Fork would be improved for any Cheat minnows that may occur adjacent to or downstream of the Queens Allotment.

The elktoe and the green floater, both mussels, or clams, were considered “likely to occur” in the project areas from the perspective that waters that flow from the Rimel, Allegheny Battlefield and Callison/Clark grazing areas all flow into tributaries of the Greenbrier River. Both species are known to occur in the main stem of the Greenbrier River. The green floater is also known from the West Fork of the Greenbrier River above the town of Durbin. None of the waters from the four proposed project areas flow into the West Fork of the Greenbrier River. Tributaries of the Greenbrier River are considered potential habitat for these species. Waters that flow from the Queens allotment does not flow into the Greenbrier River system. Therefore any activities occurring on the Queens allotment should not affect the elktoe or the green floater.

As with other sensitive aquatic species previously discussed, proposed actions on the three grazing areas, whose waters flow into the Greenbrier River system, should assist in protecting water quality for these two species of mussels. Actions that reduce sediment and nutrients and/or pollution to flowing waters, are considered to improve living conditions for these relatively non-mobile, filter feeders. Therefore, proposed actions and mitigation measures, such as items c, d, e, f, g, and h, as mentioned under the discussion of the hellbender, are all considered actions that will help protect habitat conditions for these species.

Although heavily fertilized and polluted waters can be harmful to mussels due to likely reductions or loss of oxygen, waters with a paucity of nutrients may not be as good for mussels as waters with a somewhat higher level of nutrients. Being filter feeders that

filter bacteria and microscopic, one-celled algae from the water, waters with some nutrients can help provide conditions for the production of foods used by these mussels.

For further discussion on how proposed activities under the Proposed Action effect resources such as water quality, and therefore aquatic species, see the effects sections for soils (pg. 26), wetlands, riparian areas and fisheries (pg. 30), and herbicides (pg. 50) in the Environmental Analysis.

It is concluded that implementation of the Proposed Action would not likely lead to a loss of viability or a trend toward federal listing of these eight aquatic species.

Sensitive Plants

The sensitive plant, Darlington's spurge, was determined "likely to occur" from the standpoint that the Queens Allotment, and the Allegheny Battlefield Allotment, both contain a wetland. The habitat for this species is described as mountain glades, swampy woods and possibly mountain bogs (sphagnum), riparian areas, in moist to saturated soils. Although the Queens and Allegheny Battlefield Allotments do not contain mountain glades, swampy woods, or mountain (sphagnum) bogs, they do contain riparian areas and moist to saturated soils (another kind of wetland). The wetland in the Queens Allotment, along with its accompanying transition zones to upland area, is approximately 10 acres in size. The wetland on the Allegheny Battlefield Allotment is very small, less than one acre, and is found below a side hill spring. The Rimel and Callsion/Clark grazing areas do not contain any wetlands.

The small wetland below the spring on the Allegheny Battlefield allotment is already fenced out from livestock use. The Proposed Action proposes to fence out the wetland and its associated transition zone, as well as riparian areas, within the Queens Allotment. This sensitive plant is not one of the noxious, non-native invasive species proposed for treatment with herbicide. If this plant species is found on any of the allotments it will be protected from the proposed herbicide spraying or cutting of noxious weeds/brush. Therefore, since this species and its habitat would be protected from grazing through fencing and from herbicide application and cutting, it is unlikely that Darlington's spurge, if it were to indeed occur in these wetlands, would be adversely affected.

It is concluded that implementation of the Proposed Action would not likely lead to a loss of viability or a trend toward federal listing of this plant species.

Additional Discussion of Effects to TES

For additional discussion of the potential direct, indirect, and cumulative effects from the Proposed Action to threatened, endangered or sensitive species, also see the Environmental Assessment effects sections on Soils (pg 26); Management Indicator Species (pg. 36); Threatened, Endangered and Sensitive Species (pg. 42); Herbicides (pg. 52); Noxious Weeds/Non-native Invasive Species (pg. 45); and Wetlands, Riparian Areas and Fisheries (pg. 32).

Also see the Revised Biological Assessment for Threatened and Endangered Species on the Monongahela National forest and the Biological Opinion from the US Fish and Wildlife Service.

Determination of Effects

Based on consideration of all available information, it is concluded that implementation of the Proposed Action from the Environmental Analysis entitled "Adjustments to Management and Improvements on Four Grazing Areas":

a. May affect, but is not likely to adversely affect, the Indiana bat.

b. May affect, but is not likely to adversely affect, the Virginia big-eared bat.

c. May impact individuals, but is not likely to cause a listing or a loss of viability, for the following sensitive species:

   Eastern small-footed bat
   Northern goshawk

   Hellbender
   Candy Darter
   New River Shiner
   Appalachian Darter
   Kanawha Minnow
   Cheat Minnow
   Elktoe
   Green Floater

   Darlington's spurge

If any endangered, threatened, or proposed animal or plant species are found in the proposed project areas during project layout or implementation, appropriate consultation procedures with the US Fish and Wildlife Service will be initiated.

If any sensitive species are found in the proposed project areas during project layout or implementation protective measures developed by biologists/ecologists will be incorporated into project implementation.

Prepared by:_____

Wildlife Biologist/Rangeland Program Manager Date

Approved by:_____

Forest Wildlife Biologist Date

_____

Forest Aquatic Ecologist Date

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Forest Ecologist Date

References

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