

BIOLOGICAL EVALUATION

MEAD'S MILL PROJECT

USDA Forest Service
Allegheny National Forest
Bradford Ranger District
Warren County, Pennsylvania
Clarendon, Warren, Youngsville, Pennsylvania 7.5' Topographic Quadrangles

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BIOLOGICAL EVALUATION FOR THE MEAD'S MILL PROJECT AREA

REGIONAL FORESTER SENSITIVE SPECIES

INTRODUCTION

This biological evaluation (BE) includes a brief description of project area habitat for those species found on the Regional Forester Sensitive Species (RFSS) list for the Allegheny National Forest (ANF) and includes an analysis of potential impacts associated with each alternative being considered in the Mead's Mill Environmental Assessment. This analysis evaluates the impacts of alternatives in order to:

- Avoid or minimize impacts to RFSS, whose viability has been identified as a concern (Forest Service Manual (FSM) 2670.32).
- If impacts cannot be avoided, analyze the significance of the potential adverse effects on the population or its habitat within the area of concern and on the species as a whole (FSM 2670.32).

The analyses presented in the Biological Evaluation for Threatened, Endangered, Candidate Species and RFSS on the Allegheny National Forest (ANF), January 2007 (Forest BE) (USDA-FS 2007) are not repeated in this biological assessment. The distribution and abundance, status, habitat, threats, direct impacts, indirect impacts, and cumulative impacts for these species, are discussed in the ANF Biological Evaluation (BE) which is incorporated here by reference (USDA-FS 2007, 133 to 292).

The Eastern Region (R9) RFSS list was last updated on November 8, 2006. This version updated the February 29, 2000 RFSS list and as a result there were 60 RFSS for the ANF. Since the completion of the ANF Biological Evaluation for the revised Forest Plan (USDA-FS 2007), the bald eagle has been taken off the Endangered Species List (August 9, 2007) by the United States Fish and Wildlife Service. It is now included on the ANF RFSS list for a total of 61 RFSS species and these are analyzed in this BE with the following two exceptions: The sheepnose and rayed-bean mussels are federal candidate species that are also RFSS on the ANF. They were analyzed and included under the Mead's Mill Biological Assessment dated November 19, 2007 (USDA-FS 2007e, 36). Suitable habitat is present for both species but they have not been found during any surveys. The determination for these two species was 'may affect, not likely to adversely affect', which may equate to an RFSS determination of 'may impact individuals, but no alternative is likely to cause a trend toward federal listing or loss of viability' of either species with implementation of Forest Plan S&G's.

MEAD'S MILL PROJECT AREA

The United States (U.S.) Department of Agriculture – Forest Service (USDA-FS) is proposing to implement the Mead's Mill Project, which is located on the Bradford Ranger District of the Allegheny National Forest (ANF), Warren County, Pennsylvania (PA). It is generally south and west of the City of Warren. The project area can be defined by the following watersheds; Possum Hollow in the east, Morrison Run and Dutchman Run in the central portion, Grunder Run and Lenhart Run on the west end and the Irvine and Biddle Estates just west of the Allegheny River. It is approximately 20,344 acres in size consisting of 9,944 acres of federal lands and 10,400 acres of private land and river. The project area is a portion of the "13% area" that drains directly into the unimpounded section of the Allegheny River between Kinzua Dam and Tionesta Dam. Approximately 99% of the project area falls within the North Allegheny Front watershed with portions of the West Branch Tionesta Creek watershed comprising the remaining 1%.

Cumulative Effects Analysis Area and Period

Analysis Period: Analysis of cumulative effects includes identification and evaluation of direct and indirect effects, that when considered cumulatively over time, and/or in combination with effects on private land, may result in significant effects to a species or its habitat. Because only final harvest treatments that have occurred in the last 10 years (the time it takes a stand to create a canopy) are readily apparent on aerial photographs, 1996 was chosen as the start of the analysis period. However because final harvest treatments on private industrial forest land often use a 2-step cutting method, including a shelterwood treatment within the next 10 years followed by a final harvest treatment in 10-20 yrs out, 2026 was chosen as the end of the analysis period. All federal activities proposed for this project should be completed by 2026. As a result, the cumulative effects analysis period for regeneration or final harvest spans a period of 30 years (1996-2026).

- This time period will be used for all species analyzed under this BE.

Analysis Area: The geographic scope or cumulative effects (CE) analysis boundary used to evaluate effects to the wildlife resource is the same as the Mead's Mill project boundary. This area totals 20,344 acres and includes 10,400 acres of private land and river and 9,944 acres of National Forest System lands. Rationale for selection of the CE boundary includes the following:

- Both non-federal and federal lands within this area have had intensive oil and gas development, including a recent increase in development. Adjacent lands surrounding the project area generally contain reduced or comparable levels of oil and gas activity and adding these lands will not identify any new cumulative effects and/or may "dilute" potential cumulative effects.
- The level of even-age regeneration harvest within the project boundary is at or above levels that would be expected on adjacent lands (both Forest Service and private).
- The Southern, Eastern and Northern borders follow identified boundaries (watershed and proclamation).

- Oak is the dominant forest type within much of the Meads Mill project area and greatly influences wildlife distribution and use. Extending the boundary away from the Allegheny River and the oak forest type would result in habitat conditions that are dissimilar from that of the project area.
- The developed private/residential lands within the project area or CE area are also similar/comparable to the amount of developed private land adjacent to but outside the project area and CE area. Adding additional private/residential lands outside the project area or CE area will not identify any new cumulative effects and/or may “dilute” potential cumulative effects.
- This analysis area will be used for all species analyzed under this BE.

OIL AND GAS MANAGEMENT ASSUMPTIONS FOR THE PROJECT AREA

Because oil and gas activity has been occurring within the project area for several decades, there is no definitive point in time from which to start the analysis period. As a result, potential effects include all past oil and gas development that has occurred within the analysis area prior to 2006 (present), as well as development that is anticipated to occur between 2006 and 2026. The date 2026 was chosen as the end of the analysis period, because that is the point in time in which anticipated effects of timber harvest (after the first decade and canopy closure is complete after the second decade) are evaluated.

There are presently an estimated 1943 active wells within the CE analysis area. Using an average 1.3 acres of land impacted per well (including pad, access roads, supply lines, etc) (USDA-FS 2007d, Appendix G), approximately 2,526 acres of forestland has been converted to non-forest habitat. Over the next 20 years, it is estimated that approximately 612 new wells will be developed on both private lands (312 wells) and National Forest System lands (300 wells) within the project area. These assumptions are based on OGM development over the past 10 years within the CE area and across the ANF, and are a minimal estimate of future or proposed development.

HABITAT SUMMARY OF THE PROJECT AREA

Habitat conditions on National Forest System lands within the project area are summarized in Table 1. The federal land within the project area is predominantly forested (94%), with approximately 81% of the area occurring as late structural forest (51 to 140 years old), 8% of the area is mid-structural forest (21 to 50 years old), and approximately 6% as young forest less than 20 years of age. There is no old growth timber within the project area. Forest age stages are defined in the Forest Plan FEIS (USDA-FS 2007b, 3-184 to 3-186). The availability of seedling or young forest has varied over time and between the late 1960’s and mid 1990’s forest, seedling forest <10 years of age was provided on between 4-10% of the project area. Early successional vegetation has been declining during the last decade and presently <1 % of the project area currently occurs as seedling habitat.

Predominant Forest Types include upland hardwoods (27%), Allegheny hardwoods (9%) and oak (47%). Although the project area has a large conifer component and approximately 7% of the area occurs as conifer or mixed conifer forest, with most of the conifer occurring as hemlock in the Grunder Run and Morrison Run portions of the project area. There is also some red pine

dominated stands and a few scattered sites that contain white spruce and white pine, with existing white pine occurring on plateaus and side slopes in the western third of the project area. There is also a very small aspen component. The entire project area is in the beech bark disease killing front and as a result there has been extensive mortality of beech trees throughout. The beech mortality, combined with scattered mortality of white ash and sugar maple, has resulted in a higher density of large diameter snags than is generally found across the ANF. A total of 200 acres or ~2% of the project area occurs within the ANF landscape corridor (MA8.2) and includes core areas and connecting corridors that are currently being managed to provide late structural/old growth forest conditions. There are no old growth stands (those greater than 300 years of age - USDA-FS 2007b, 3-185) currently within the project area. The remainder of the mature forest in the project area is currently being managed to provide predominantly late structural forest conditions including older trees, maintenance of a predominantly high forest canopy and increased vertical structure. These lands also contain a large conifer component and as a result are good candidates to provide conditions characteristic of true old growth forest in Pennsylvania.

Non-forested habitat (~6% of the project area) occurs on over 52 sites (~ 540 acres - See Table 1) across the project area, with most existing openings (85%) being less than 10 acres in size and openings <1 acre making up almost 30% of the total number of sites. There are only 7 sites greater than 10 acres in size, including 1 opening which occurs north of the Allegheny River. The largest opening (156 acres) can be characterized as a maintained grass field opening (the Beanfields) in the northwest quadrant of the confluence of the Allegheny River and the Brokenstraw Creek. The other large opening (61 acres) is the old landfill just south of the river and north of Grunder Road. Shrub openings are found on 55 acres across 5 sites while the rest of the existing openings (91%) are predominantly grass/forb openings. Approximately 210 acres of the existing openings within the project area are being maintained and/or have received past wildlife treatments such as planting, fencing or seeding.

Table 1: Mead’s Mill Project Area Habitat Summary for National Forest System Lands

Habitat/Landscape Condition	Amount in Project Area	% of Project Area
Forest Communities	~9,400	94
Deciduous Hardwood	8,760	93
Conifer	640	7
Forested Age Class		
0 to 20 years	605 acres	6
21 to 50 years	770 acres	8
51 to 80 years	1,220 acres	12
81 to 110 years	6,052 acres	61
111 to 140 years	756 acres	8
141 to 300 years	0	0
301 plus years	0	0
Non-Forest Communities	540 acres	6
Grass/forb Openings	485 acres	5
Shrub Openings	55 acres	<1
Stream/Riparian/Wetlands	2,526	

Habitat/Landscape Condition	Amount in Project Area	% of Project Area
National Wetland Inventory Wetlands ¹	371 acres	
Streams ² (in miles)	92 miles	NA
Riparian Stream/floodplain ³	2,155 acres	

¹ – Includes federal and non-federal ownership and river habitat

² – Includes streams and river across federal and non-federal ownership

³ - Stream/riparian habitat includes all land within 200' of a perennial or intermittent stream.

Approximately 11% of the project area (combined private and federal land) has been identified as stream riparian habitat, floodplain and riparian habitats combined. The riparian habitat or area of influence is the area within 200 ft. from any perennial or intermittent stream. This distance was used because of the number of tributary spring seeps disbursed along most stream corridors are quite numerous and variable in size and shape. Wildlife use of these seeps occurs year round. The area of influence along the Allegheny River is much wider than 200 feet due to the width of the river corridor and variety of adjacent habitats while forest streams are generally similar across the landscape. The project area also includes 371 acres of National Wetland Inventory (NWI) wetlands (including federal and non-federal ownerships). While non-FS lands comprise slightly more than 51% of the project area and contain 51% of the total stream miles, only 30% of the NWI wetlands are on private lands.

ALTERNATIVES CONSIDERED

Alternative 1: No Action

Although 25 acres of removal harvest and 10 acres of reforestation (site prep) that were approved in previous decisions will be implemented, there are no new federal actions proposed under this alternative. Alternative 1 will serve as a baseline or reference point from which effects of the two action alternatives (Alt. 2 & 3) can be evaluated. This is a viable alternative and responds to concerns of those who do not want management activities to occur in the project area.

Alternative 1 will let ecological processes control vegetation development and habitat changes will occur primarily from natural disturbances, although activities remaining within the project area that have been approved in past environmental assessments will still continue. Oil and gas development is expected to continue on private mineral leases (having outstanding sub-surface rights) on both private and federal land within the project area.

Alternative 2: Proposed Action

This alternative was based on the site specific purpose and need for the project area and proposed activities are intended to move the project area from the present condition, to the desired future condition identified in the Forest Plan. Alternative 2 uses a variety of even-aged timber harvest treatments, wildlife habitat improvement work and understory treatments to achieve a more balanced age class distribution, improve stand structure and diversity, and enhance wildlife habitat conditions in MA 3.0 and 6.1. This alternative also proposes activities to increase the mast production in oak stands and enhance the existing white pine component. Transportation activities include construction of one new road totaling 0.6 miles, road reconstruction and

decommissioning, gravel pit expansion and development and limestoning of roads within 300 ft. of any stream. This alternative includes ~1,000 acres of NNIS treatment – a combination of manual/mechanical and/or herbicide treatments. Table 2 summarizes activities proposed under this alternative.

Alternative 3:

This alternative focused on addressing water quality issues in the project area. It responds to public concerns related to minimizing even-age timber harvest and eliminating 0.6 miles of new road construction within the exceptional value watershed, Dutchman Run. Stands being accessed by the new road would be dropped from vegetation activities. Harvesting would not take place on 27 acres proposed for a commercial thinning, shelterwood, nor final harvest, respectively. It also eliminates a 13 acre hemlock release due the concern of increased sedimentation potential while hauling logs on a road needing upgrades. All other action items would remain the same as Alternative 2 for this alternative. Table 2 summarizes activities proposed under this alternative.

Summary of Alternatives

Table 2 summarizes activities for each of the action alternatives identified above (Alternatives 2 and 3). Alternative 1 (no action) is also displayed because OGM activities will likely occur even if there are no treatments proposed under this alternative. For clarity, the estimated time of completion (2006 – 2026) for proposed timber harvest is also displayed in Table 2.

PROPOSED ACTIONS

Three alternatives are evaluated in the Mead’s Mill EA. Table 2 summarizes activities that may impact RFSS for the ANF or their habitat proposed under each alternative.

Table 2: Proposed Activities by Alternative in the Mead’s Mill EA

Activity	Alt. 1 No Action	Alt. 2 Proposed Action	Alt. 3
Timber Harvest	Acres		
Commercial Thinning	0	433	388
Shelterwood seed cut/Removal Harvest	25	449	421
White Pine Release - Non-commercial	0	5	5
Hemlock Release	0	9	0
Delayed Shelterwood Removal Harvest	0	82	82
Aspen Regeneration ¹	0	18	18
Opening Construction	0	1	1
Salvage Shelterwood/Final Harvest	0	25	25
Total Vegetation Management (acres)	25	1022	940
Timber Outputs	MMBF		
First Entry	0	3.9	3.6
Second Entry	0.2	3.8	3.6

Activity	Alt. 1 No Action	Alt. 2 Proposed Action	Alt. 3
Total Volume (MMBF)²	0.2	7.7	7.2
Reforestation			
	acres		
Site Preparation	10	657	630
Herbicide Application	0	566	539
Fence Construction and Maintenance	0	556	529
Release - only	0	1,025	1,025
Release - regeneration	0	571	544
Planting	0	39	39
Mechanical scarification	0	408	408
Prescribed burn	0	421	421
Pile slash and burn	0	128	128
Wildlife Habitat Improvement			
	acres		
Restore and maintain openings	0	140	140
Plant & mow warm & cool season grasses	0	141	141
Plant & fence mast/fruit trees	0	89	89
Burn to reestablish grassland and burn yearly to maintain	0	100	100
Herbicide interfering vegetation & non-native, invasive species in openings	0	138	138
Regenerate aspen trees for an early age class ¹	0	18	18
Thin & release white pine and butternut to promote growth	0	6	6
Prune & release apple trees to promote production of apples	0	18	18
Girdle trees to create snags for roosting	0	10	10
Release opening to promote desirable trees & shrubs	0	22	22
Install structures (nesting & roosting)	0	72	72
	number		
Construct brush piles to provide wildlife cover	0	14	14
Rehabilitate vernal ponds mechanically to improve aquatic habitat	0	2	2
Install interpretive sign for wildlife education	0	1	1
NNIS Treatment			
	acres		
A combination of herbicide applications, manual and mechanical treatments for NNIS	0	1,000	1,000

Activity	Alt. 1 No Action	Alt. 2 Proposed Action	Alt. 3
Road Construction and Maintenance			
Road construction – new corridor	0	0.6 miles	0
Road construction – existing corridor	0	5.7 miles	5.0 miles
Decommissioning non-system roads	0	0.6 miles	0.6 miles
Apply limestone surfacing on potential haul roads	0	0.7 miles	0.7 miles
Road maintenance on existing system roads needed for hauling	0	12.5 miles	12.5 miles
Pit Development			
Gravel pit expansion (resulting in the conversion of forest habitat to an opening)	0	Up to 9 ac. (7 sites)	Up to 9 ac. (7 sites)
Gravel pit restoration	0	Up to 5 ac (1 site)	Up to 5 ac (1 site)

¹ - Listed under both timber harvest and wildlife sections of this table.

² - Millions of Board Feet

This BE focuses on the direct, indirect, and cumulative effects that proposed activities may have on the current RFSS listed for the ANF. All species will be evaluated to determine their status in the project area based on habitat preferences, historic range, and suitability of the available habitat.

The evaluation will concentrate on those species having occupied or suitable unoccupied habitat in the project. An evaluation of CE on RFSS will use the same analysis area and time period selected for the Biological Assessment of T&E Species, and may include any pertinent information regarding private land adjacent to the analysis area. For this particular project, the CE analysis area does contain some private land.

Species Status

Table 3 summarizes the status of sensitive species found in the Mead's Mill project area. Each species is placed in one of the following three categories depending on their known occurrence and available habitat: 1) species occurrence has been documented in the past and there is occupied habitat in the project area, 2) occurrence has not been documented in the project area, but suitable habitat is present and 3) occurrence has not been documented in the recent past and suitable habitat is not present.

Table 3: Regional Forester Sensitive Species

Species	Occupied Habitat	Suitable Habitat in the Project (Presence not Documented)	No Suitable Habitat in the Project Area
Mammals			
Northern flying squirrel (<i>Glaucomys sabrinus</i>)		X	
Mollusks			
Long-solid mussel (<i>Fusconaia subrotundra</i>)		X	
Creek heelsplitter (<i>Lasmigona compressa</i>)		X	
Rabbitsfoot (<i>Quadrula cylindrica</i>)		X	
Rainbow mussel (<i>Villosa iris</i>)		X	
Round pigtoe (<i>Pleurobema sintoxia</i>)		X	
Snuffbox (<i>Epioblasma triquetra</i>)		X	
Threeridge (<i>Amblema plicata</i>)		X	
White heelsplitter (<i>Lasmigona complanata</i>)		X	
Wabash pigtoe (<i>Fusconaia flava</i>)	X		
Rayed-bean (<i>Villosa fabalis</i>) ¹		X	
Sheepnose (<i>Plethobasis cyphus</i>) ¹		X	
Invertebrates			
Green-faced clubtail (<i>Gomphus viridifrons</i>)		X	
Harpoon clubtail (<i>Gomphus descriptus</i>)		X	
Rapids clubtail (<i>Gomphus quadricolor</i>)		X	
Mustached clubtail (<i>Gomphus adelphus</i>)		X	
Midland clubtail (<i>Gomphus fraternus</i>)		X	
Ski-tailed emerald (<i>Somatochlora elongata</i>)		X	
Uhler's sundragon (<i>Helocordulia uhleri</i>)		X	
Maine snaketail (<i>Ophiogomphus mainensis</i>)		X	
Zebra clubtail (<i>Stylurus scudderi</i>)		X	
Ocellated darner (<i>Boyeria grafiana</i>)		X	
Resolute damsel (<i>Coenagrion resolutum</i>)		X	
Birds			
Yellow-bellied flycatcher (<i>Empidonax flaviventris</i>)		X	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	X		
Osprey (<i>Pandion haliaetus</i>)	X		
Northern goshawk (<i>Accipiter gentilis</i>)		X	
Reptiles			
Timber rattlesnake (<i>Crotalus horridus</i>)		X	
Wood turtle (<i>Glyptemys insculpta</i>)		X	
Plants			

Species	Occupied Habitat	Suitable Habitat in the Project (Presence not Documented)	No Suitable Habitat in the Project Area
Butternut (<i>Juglans cinerea</i>)	X		
Creeping snowberry (<i>Gaultheria hispidula</i>)		X	
Rough cotton-grass (<i>Eriophorum tenellum</i>)		X	
Thread rush (<i>Juncus filiformis</i>)		X	
Wiegand's sedge (<i>Carex wiegandii</i>)		X	
Hooker's orchid (<i>Platanthera hookeri</i>)		X	
American fever-few (<i>Parthenium integrifolium</i>)		X	
Bartram shadbush (<i>Amelanchier bartramiana</i>)		X	
Sweet-scented Indian-plantain (<i>Hasteola suaveolens</i>)		X	
Mountain wood fern (<i>Dryopteris campyloptera</i>)		X	
White trout-lily (<i>Erythronium albidum</i>)	X		
American ginseng (<i>Panax quinquefolius</i>)	X		
Checkered rattlesnake plantain (<i>Goodyera tessellata</i>)		X	
Canada yew (<i>Taxus canadensis</i>)		X	
Boreal bog sedge (<i>Carex magellanica</i> spp. <i>Irrigua</i>)		X	
Kidney-leaved twayblade (<i>Listera smallii</i>)		X	
Bristly Black Currant (<i>Ribes lucustre</i>)		X	
Swamp Red Currant (<i>Ribes triste</i>)		X	
Stalked Bulrush (<i>Scirpus pedicellatus</i>)		X	
Mountain starwort (<i>Stellaria borealis</i> spp. <i>Borealis</i>)		X	
Queen-of-the-prairie (<i>Filipendula rubra</i>)		X	
Fishes			
Channel darter (<i>Percina copelandi</i>)		X	
Gilt darter (<i>Percina evides</i>)		X	
Gravel chub (<i>Erimystax x-punctata</i>)		X	
Longhead darter (<i>Percina macrocephala</i>)	X		
Mountain brook lamprey (<i>Ichthyomyzon greeleyi</i>)			X
Spotted darter (<i>Etheostoma maculatum</i>)		X	
Tippecanoe darter (<i>Etheostoma tippecanoe</i>)	X		
Bluebreast darter (<i>Etheostoma camurum</i>)		X	
Burbot (<i>Lota lota</i>)		X	
Mountain madtom (<i>Noturus eleutherus</i>)		X	
Northern madtom (<i>Noturus stigmosus</i>)		X	

¹ Analyzed as a Federal Candidate species in the Mead's Mill BA.

SPECIES WITH SUITABLE OCCUPIED HABITAT

BALD EAGLE - (*Haliaeetus Luecocephalus*)

Background: The background, including distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for the RFSS bald eagle is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 25 to 46).

Project Area Habitat

Nesting Habitat - Primary nesting habitat in the project area for the bald eagle is defined in the ANF BE as acreage within ½ mile of the Allegheny River. It totals 3,518 acres on both private (1,636 acres) and federal lands (1,882 acres) combined. This includes the lower portion of the Brokenstraw Creek. There are other areas where eagle nesting may occur, due to the proximity to foraging habitat, but this area has the greatest potential for nesting. There are currently no documented eagle nests within the project area. However, the closest nest to the project area is located at the project area boundary or immediately outside the project area (< 300 feet upstream of the project boundary) on private land on the south side of the river, across from the Mead Island gravel quarry. This nest was just discovered on January, 30, 2008 and it has not been determined to be active at this time although adult birds have been observed at the nest site. Because birds are present the Pennsylvania Game Commission has declined to approach the nest to determine property ownership. It is less than 500 feet and downslope from the eastern section of Grunder Road and less than 300 feet downslope of active oil wells. Grunder Road receives daily OGM activity and what might be considered light public traffic use of a dead-end road. A location like this would not typically be considered as suitable nesting habitat. Additionally, recreational boats will be able to pass immediately below the nest site. The next two closest known eagle nests include the Brokenstraw nest on State Game Lands 86 (formerly called the Dunns Eddy nest), which lies 2.0 miles west of the project area above the Allegheny River and the Kinzua nest, which lies ~5 miles northeast of the project area (7.5 miles from the closest stands proposed for treatment) on slopes above the Allegheny Reservoir. Eagles have also been observed carrying nest material over the Hedgehog Run drainage, approximately 1 mile east of the project area.

While over 80% of the project area provides mature forest only those portions of the project area that do not receive oil and gas activity, intensive public use and/or are not near heavily traveled roads are typically considered suitable Bald Eagle nesting habitat. In an effort to identify the most un-disturbed and least accessible areas, a GIS analysis of the project area was done to identify those areas on National Forest System Lands that are greater than ¼ mile from an existing road and none were identified within the project area. The closest suitable nesting habitat was found on State Game Lands 86 and the National Recreation Area prior to locating the nest discussed in the above paragraph. Although these areas are relatively undeveloped, they are outside the project area and the cumulative effects area.

Foraging/Roosting Habitat - The lower part of the Brokenstraw Creek flows into the Allegheny River and the main channel of the Allegheny River flows through the project area. They are both large enough to provide suitable foraging habitat. There is recent documentation of eagles foraging along the river within the project area. Although these areas are heavily impacted by

private land development and continuous human activity, eagles are regularly observed foraging or perching along these streams within the project area. Additionally, eagles have been documented north, east, and west of the project area, and it is assumed that frequent eagle use occurs.

Winter Habitat - The Forest BE states that during the winter, bald eagles congregate in areas where there is an abundant, readily available source of food, along with one or more suitable night roost trees. This tendency for bald eagles to congregate at certain locations during the wintering period is well documented. They also often perch in trees near the waters edge and wait for prey, and congregate in winter roosts along the River and on private islands below the dam. However, much of the winter foraging/roosting occurs at scattered locations across the Forest and eagles are often observed during the winter months along Conewango Creek, Brokenstraw Creek, Tionesta Creek and the Allegheny River, below Warren, PA. This description includes portions of the Mead's Mill project area

Direct and Indirect Effects

Direct Effects

Alternative 1

Since there are no activities proposed under this alternative that will impact eagle habitat there are no direct effects anticipated. This includes the previously approved activities (25 acres of shelterwood seed cut/removal harvest) which are outside of primary nesting habitat.

Alternatives 2 & 3

Direct mortality or injury to adults, embryonic young, nestlings, or fledglings could occur if a nest tree or the forested area surrounding the nest is harvested. Additionally, direct mortality can occur if Forest Plan S&G for herbicide applications are not implemented correctly and herbicides are spilled in concentration or applied too close to nest sites. There is a proposal to thin white pines and a small aspen regeneration harvest in compartment 203, stand 20 and another to conduct a commercial thin in compartment 206, stand 6. Both stands have a closed canopy. They are not suitable nesting or roosting habitat. Both stands are adjacent to but not in foraging habitat. The Beanfields are located within primary nesting habitat as well as roosting and foraging habitat. Activities such as burning in the Beanfields are likely to occur during the nesting season; however, no nests are within 2 miles of the project area. Although the burning will occur within foraging habitat it is not likely to cause the death or injury to any roosting or foraging eagle. Considering the amount of human activity that already exists adjacent to the river, the proposed harvests and burn are not expected to result in direct effects to eagles or their habitat under any alternative.

Indirect effects

Alternatives 2 and 3

Adverse indirect effects to the bald eagle could occur from any forest management activities that alter suitable habitat (creating a loss of potential nest or roost trees), cause repeated or long-term disturbances (such as heavy machinery use), or alter water quality (adversely affecting an existing fishery, i.e., foraging habitat). Prescribed burning is proposed in the Beanfields at the confluence of the Allegheny and Brokenstraw. These burns are short term (~3 hours from start

to finish) and could result in short term effects in the form of disturbance from smoke plumes which could cause a bird to leave its roost or discontinue foraging. Smoke management is a consideration in developing a burn plan and burning will be conducted when wind direction and burning conditions will minimize impacts to the Allegheny River and Brokenstraw Creek. Potential effects to bald eagle foraging could occur if proposed actions reduce water quality conditions to a level that the existing fishery is adversely affected. However there are not expected to be any effects from harvesting timber on water quality, since all treatments will implement Forest Plan S&G's. Indirect effects of harvesting timber on water quality may include an increase in sediment delivery to streams associated with road use during hauling of harvested timber. However to reduce the risk of haul related sedimentation, roads within 300' of a stream would be surfaced with limestone to reduce this potential impact. Activities planned for federal lands are not likely to indirectly affect the newly discovered nest. However, uncontrolled activities associated with non-federal recreation or OGM may indirectly affect the new nest by scaring birds off the nest.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects: Potential cumulative effects include any activities that make suitable eagle habitat unsuitable. These activities include final harvest treatments that essentially eliminate mature forest conditions on the site, any activity that converts forest to non-forest such as oil and gas development, opening construction and gravel pit development and any activity that causes disturbance to eagle foraging, roosting or nesting. There are no federal activities proposed within ½ mile of the new nest, so potential cumulative effects will be evaluated by looking at how much of the analysis area is made unsuitable from past, present and future actions, as well as how much suitable habitat will continue to be available at the end of the analysis period.

Oil and Gas Development

Oil and gas development assumptions are listed above on page 5. As a result, the cumulative past, present and anticipated future oil and gas development totals on the combined federal and non-federal lands is 2,543 wells which will result in an estimated 3,300 acres (~16% of the project area) of actual disturbance or conversion of forest to non-forest conditions across the project area.

NNIS Treatments

Approximately 22 stands in six compartments on Crull Island and shoreline adjacent to the Allegheny River and Brokenstraw Creek contain variable amounts of NNIS requiring treatment. Forest Plan S&G's for proper use of herbicides are found on page 40 of the Forest BE and in Appendix G1 and G2 of the FEIS. The treatments on Crull Island are proposed to be implemented by hand rather than through herbicide use because it is in MA 5.1.

Openings

In addition to oil and gas activity that converts forest to non-forest, proposed savannah construction and development of gravel pits will also make mature forest habitat unsuitable as eagle nesting habitat. Approximately 715 acres of anticipated past, present and future openings

on private and National Forest System lands within the analysis area are displayed in Table 4 below. Not all of these openings are actually within primary nesting habitat.

Timber Harvest

Anticipated timber harvest that is expected to occur within the analysis area during the analysis period is displayed in Table 4. Only 5 acres of final harvest activities are proposed within primary nesting habitat on federal lands for bald eagles and one might expect a similar amount to occur on the private lands. Additionally, because final harvest treatments result in regeneration of mature forest, this acreage is considered un-suitable bald eagle nest habitat.

Cumulative Effects Summary

Cumulative effect changes will be evaluated by looking at the amount of unsuitable habitat (openings, area affected by OGM development, seedling stands and sapling pole stands), by looking at the amount of habitat affected by disturbance associated with commercial harvest (partial harvest), and by looking at the total amount of suitable habitat that will be available under each of the alternatives in the year 2026. This information is displayed in Table 4.

Table 4: Changes in Habitat Across the Project Area

Activity	Present Condition	Alt. 1	Alt. 2	Alt. 3
Seedling Stands (Unsuitable)	505 ac <3%	1,227 ac 6%	1,227 ac 6%	1,227 ac 6%
OGM Development (Unsuitable)	2,526 ac 12%	3,322 ac 16%	3,322 ac 16%	3,322 ac 16%
Openings (Unsuitable)	715 ac 4%	715 ac 4%	716 ac 4%	716 ac 4%
Sapling/Pole Stands (Unsuitable)	1,828 ac 9%	1,356 ac 7%	1,892 ac 9%	1,865 ac 9%
Forested acres across MMPA remaining after timber harvest¹	14,769 ac 73%	13,723 ac 67%	13,186 ac 65%	13,213 ac 65%

¹ - This habitat is within the 13% area and birds have been observed across most of the project area.

Based on anticipated cumulative effects, suitable bald eagle habitat will be reduced by up to 8% from the present condition and up to 4% from the no action alternative. Although suitable bald habitat will be reduced under both action alternatives, it will continue to occur on 65% or more of the analysis area under all alternatives. Suitable habitat will continue to be widespread and occur in all existing watersheds. As a result, there are no significant direct, indirect or cumulative effects anticipated to the bald eagle or its habitat.

Bald Eagle Determination and Rationale

Alternative 1

There are 5 acres of previously approved shelterwood removal harvest in this project within primary nesting habitat and 20 additional acres in the rest of the project. Primary nesting habitat will continue to be widely available. Since there are no other activities proposed under this

alternative that will impact the bald eagle or its habitat, there is no adverse impact anticipated to the bald eagle or its habitat.

Alternative 2 and 3

Based on the analysis presented above and the following rationale, there is a ‘no adverse impact’ determination to the bald eagle anticipated under these alternatives. The likelihood of direct or indirect mortality as a result of implementation of the Mead’s Mill project is unlikely. This determination is made based on the following rationale:

- Forest Plan standards and guidelines for water resources and non-native invasive species (NNIS) treatments will maintain existing water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs within the project area and this is expected to maintain or improve eagle foraging habitat. This will reduce the likelihood that a bald eagle is harassed or harmed as a result of proposed activities.
- Although the bald eagle is no longer considered a federally listed species, the Forest BA standards and guidelines for protection and monitoring of the bald eagle will remain in place for five years from the date (August 12, 2007) it was de-listed and adoption of management guidelines identified in the Bald and Golden Eagle Protection Act will protect the eagle into the future.
- Management of riparian habitat (forest-wide) will focus on protection of water quality and riparian dependent species, as well as restoring healthy forest conditions and associated bald eagle nesting, roosting and foraging habitat.
- All proposed activities are greater than 2 miles from the closest known eagle nest.
- Suitable bald eagle nesting, roosting, and foraging habitat will continue to be widely available under all alternatives.
- All conservation measures in the USFWS concurrence letter and site specific mitigations related to bald eagles apply to proposed Forest Service activities and oil and gas developments.

With implementation of Forest Plan S&G’s and site specific mitigations, there will be no impact to individuals or their habitat and the proposed federal activities will not cause a trend toward federal listing of this species.

OSPREY (*Pandion haliaetus*)

Background

The background, including distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for the osprey is discussed in the ANF Biological Evaluation (USDA-FS - 2007, 155 to 160) and is incorporated here by reference.

Project Area Habitat

Nesting Habitat - There are no documented osprey nests within the project area. The Allegheny Reservoir and Allegheny River provide the most desirable nesting habitat on the ANF and the closest suitable nesting habitat is outside the project and the cumulative effects area. The closest known osprey nest to the project area is found within the Allegheny Reservoir at Sugar Bay, approximately 13.5 miles upstream from Browns Run. The 3.5 miles of river corridor in the project area are fairly well developed and are not suitable.

Foraging Habitat - Suitable foraging habitat occurs primarily along the Allegheny River, Allegheny Reservoir, Brokenstraw Creek, Clarion River, Tionesta Creek, and on the larger impoundments that exist at scattered locations across the ANF. The lower part of the Brokenstraw Creek flows into the Allegheny River and the main channel of the Allegheny River flows through the project area. They are both large enough to provide suitable foraging habitat. Although these areas are heavily impacted by private land development and continuous human activity, osprey are regularly observed foraging or perching along these water courses within the project area. Additionally, they have been observed north, east, and west of the project area, and it is assumed that frequent osprey use occurs.

Direct and Indirect Effects

Alternative 1

There are no direct or indirect effects anticipated to osprey since there are no new activities proposed within their habitat under this alternative. Previously approved activities are located outside typical osprey nesting and foraging habitat.

Alternatives 2 & 3

Similar to the bald eagle, direct mortality or injury to adults, embryonic young, nestlings, or fledglings could occur if a nest tree or the area surrounding the nest is harvested. Adverse indirect effects to the osprey could occur from any of the same forest management activities that alter suitable habitat (creating a loss of potential roost trees or physically disturb stream channels), create sedimentation, cause repeated or long-term disturbances (such as heavy machinery use), or alter water quality (adversely affecting an existing fishery). Indirect effects of harvesting timber on water quality may include an increase in sediment delivery to streams associated with road use during hauling of harvested timber. However to reduce the risk of haul related sedimentation, roads within 300' of a stream would be surfaced with limestone that will reduce this potential impact.

There is a proposal to thin white pines and a small aspen regeneration harvest in compartment 203, stand 20 and another to conduct a commercial thin in compartment 206, stand 6. Both stands have a closed canopy. They are not suitable nesting or roosting habitat. Both stands are adjacent to but not in foraging habitat. The Beanfields are located within roosting and foraging habitat but not nesting habitat. Activities such as burning in the Beanfields are likely to occur during the nesting season; however, no nests are within 2 miles of the project area. Although the burning will occur within foraging habitat it is not likely to cause the death or injury to any roosting or foraging osprey.

Prescribed burning is proposed in the Beanfields at the confluence of the Allegheny and Brokenstraw. These burns are short term (~3 hours from start to finish) and could result in short term effects in the form of disturbance from smoke plumes which could cause a bird to leave its roost or discontinue foraging. Smoke management is a consideration in developing a burn plan and burning will be conducted when wind direction and burning conditions will minimize impacts to osprey, the Allegheny River and Brokenstraw Creek.

Lastly, NNIS treatments using back packs and hand application have been proposed along both sides of the Allegheny River in Compartments 201, 202, 203, 206 and 209. These treatments include manual treatments on Crulls Island and along or adjacent to State Routes 6 and 62. Although these treatments will occur within foraging and roosting habitats it is not likely to cause the death or injury to any roosting or foraging osprey. With implementation of the appropriate Forest Plan S&G's, site specific mitigations, and considering the amount of human activity that already exists adjacent to the river, the proposed timber harvests, OGM activities, pit development, and prescribed burns proposed on federal lands are not expected to result in direct effects to osprey or their habitat under any alternative. Manual NNIS treatments on Crulls Island might scare a bird from a perch or roost but are not likely to harm a bird.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects: Potential cumulative effects include any activities that make suitable osprey habitat unsuitable. These activities include any activity that has the potential to cause disturbance to osprey foraging, roosting or nesting. The only activities proposed in any areas utilized by osprey are NNIS treatments along foraging and perching habitats. Just as with the bald eagle, potential cumulative effects for osprey are dependent on the method of the proposed treatment such as pulling, mechanical or the use of herbicide. Impacts will be evaluated by looking at how much of the analysis area is made unsuitable by federal activities from past, present and future actions, as well as how much suitable habitat will continue to be available at the end of the analysis period. The most likely actions to occur on federal lands will be associated with NNIS treatments or oil and gas development. No other activities are proposed during this projects timeline. These same activities along with timber harvest and or home/opening development are most likely to occur on private land in amounts similar to activities on witnessed on federal lands.

Cumulative Effects Summary

Of the proposed treatments in Alternatives 2 and 3, water quality and potential habitat could be affected by timber harvest, some reforestation and/or NNIS treatments such as herbicide and fertilizer applications, road construction activities and oil and gas development if these activities are not properly designed, located, or buffered. However, Forest Plan S&G's discussed throughout this BE will maintain aquatic and riparian habitats.

Proposed activities designed to maintain or improve water quality over the long-term under Alternatives 2 and 3 include:

- road maintenance (improving road-runoff management)
- limestone surfacing (armoring running surfaces to decrease sediment formation and movement)
- road decommissioning (remove non-point sources of sedimentation and restores habitat and natural drainage patterns within these corridors).

Suitable habitat will continue to be widespread and occur in all existing watersheds. As a result, there are no significant cumulative effects to the osprey or its habitat anticipated

Osprey Determination and Rationale

A 'No impact' determination is made for the osprey under all alternatives. Direct mortality as a result of implementation of the Mead's Mill project is unlikely to occur. Further, the likelihood of indirect impacts to osprey nesting, foraging or perching habitats is also considered remote. This determination is made based on the following rationale:

- Forest Plan standards and guidelines will be implemented to maintain water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain or improve osprey foraging habitat.
- Management of riparian habitat (forest-wide) will focus on protection of water quality, protection of riparian dependent species and restoring healthy forest conditions and associated osprey nesting, roosting and foraging habitat.
- All proposed activities are greater than 10 miles from the closest known osprey nest which is outside (upstream) the CE .
- Suitable osprey roosting, and foraging habitat will continue to be widely available under all alternatives.

With implementation of Forest Plan S&G's, there will be no impact to individuals or their habitat and the proposed federal activities will not cause a trend toward federal listing of this species.

WABASH PIGTOE (*Fusconaia flava*)

Background

The background, including distribution and abundance, status, habitat, threats, direct effects, and indirect effects for this mussel is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 69 to 72 and 203 to 204).

Project Area Habitat

The Allegheny River likely provides the only suitable habitat because it drains glaciated lands making the river productive. Other streams on the ANF drain unglaciated lands and are less suitable. The pigtoe has been documented in the Allegheny River just south of Crulls Island.

Aquatic and riparian systems are linear, connected, and form larger systems. Any impacts to the perennial or upper reaches (intermittent sections) of any of the streams within the project area could have an impact on suitable habitat further downstream.

Direct and Indirect Effects

Alternative 1.

Potential effects to the Wabash pigtoe could occur as a result of no activities to address runoff concerns. Specifically, there would be no limestone surfacing on dirt and gravel roads at areas identified as a concern for runoff into streams. Sedimentation rates would continue into two streams that flow into the Allegheny River. Similarly, the non-system dirt and gravel road that parallels a portion of Dutchman Run would not be decommissioned, allowing sedimentation to the stream to continue. Dutchman Run also flows to the Allegheny River where suitable habitat exists for the Wabash pigtoe.

Alternatives 2 & 3

The clubshell and northern riffleshell section in the ANF Biological Evaluation (page 69) identifies activities with negligible effects, potential beneficial effects, and potential adverse affects. These effects not only apply to the two endangered mussels, but to the Wabash pigtoe and other mussel and aquatic species as well. These effects are incorporated here by reference and are also summarized below with specifics of the proposed activities.

Affects are primarily associated with land-disturbing activities within the 13% Area, as well as from the introduction of zebra mussels into the Allegheny Reservoir or Allegheny River at Forest Service boat launches. Activities with potential beneficial effects include Road Decommissioning and Non-native Invasive Species Control. The primary, potential adverse effect from land-disturbing activities is sedimentation and/or degradation of water quality. Activities with the potential to cause these effects include: Road Construction and Maintenance, the construction, maintenance and operation of motorized trails in Intensive Use Areas, and Herbicide Treatment. For the possible introduction of zebra mussels, the Operation of Boat Launches is the primary activity that could have an affect on the Wabash pigtoe.

Within the Meads Mill project area, the activities that would have potential beneficial effects include road decommissioning and the treatment of non-native invasive species. A total of 0.6 miles of non-system road are proposed for decommissioning, of which 0.5 miles parallel and cross the headwaters of Dutchman Run, an Exceptional Value stream and one that drains to the Allegheny River. With the decommissioning, a long-term sediment source will be eliminated. The treatment of non-native invasive species within riparian areas, including areas along the river and on Crulls Island, will help maintain native vegetation along these critical areas.

The proposed activities that could adversely affect the Wabash pigtoe include road work and use on dirt and gravel roads within 300' feet of a stream, operation and use of motorized trails, herbicide treatments, as well as the introduction of zebra mussels from boats launching at the Buckaloons launch site. Specifically, 0.56 miles of two roads will be surfaced with limestone to reduce sediment runoff. These include a road crossing an unnamed tributary to the Allegheny River, and a section of road that parallels a tributary to Grunder Run. Although not part of the decision document, routine maintenance of the Rocky Gap ATV trail continues to address runoff concerns when they are identified. Several sections of the trail have been surfaced with limestone recently in areas where runoff is a concern. As for herbicide treatments, buffers along waterways will be implemented following Forest Plan S&G's. And lastly, the threat of zebra mussel introduction is low from launches taking place at Buckaloons. The boats that typically launch are canoes and occasionally small motor boats. These normally are not high risk boats because of how they are used, e.g., are primarily day-use boats in smaller bodies of water. In addition, signage posted on the bulletin boards at the launch will continue to alert boaters of the zebra mussel threat and how they can help prevent their spread.

As a result of the implementation of Forest Plan S&G's, and conservation measures outlined by the ANF and USFWS, there are no adverse direct or indirect effects anticipated for this species or its habitat under Alternatives 2 and 3. However, potential effects could continue to occur under Alternative 1 in the short term, until such time that surfacing with limestone and road decommissioning can be addressed separately outside of the Meads Mill EA decision.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects:

Alternatives 1 - 3 - The cumulative effects described in the Forest BE (page 72-74) for the clubshell and northern riffleshell also apply to the Wabash pigtoe, and because Meads Mill is within the 13% Area. These effects relate to the potential zebra mussel infestation from areas outside the ANF, cooler water and flow releases from Kinzua Dam into the Allegheny River, and oil and gas development. These are not ANF actions, but can have an affect on the species and its suitable habitat. These effects are summarized below.

The zebra mussels have been documented in the Conewango Creek, as well as the Allegheny River just downstream of the Conewango. As the mussels continue to move downstream into the river and their numbers increase, their impact on suitable habitat and existing Wabash populations could become adverse. Wabash numbers appear to be very low in the section of river within the Meads Mill area, and any incursion of zebra mussels could result in a further decline of the species depending on the severity of the infestation.

One factor that appears to have been affecting the Wabash pigtoe for many years is the cooler waters released from Kinzua Dam. While the water temperature tends to moderate the further downstream of the dam you travel, the temperature within the section of river within Meads Mill are still not as warm as the pigtoe would prefer and appear to have affected their life history requirements. On the other hand, the minimum flow releases from the dam have likely provided a more stable environment for the pigtoe, actually providing more habitat over a longer period of time.

The potential for cumulative effects from private oil and gas activity has increased in recent years as a result of increased drilling. Within the Meads Mill area, numerous private leases exist both on ANF and non-ANF land. It is reasonable to assume that new and existing private oil and gas developments within the 13% Area will continue to result in sedimentation to streams, primarily from dirt and gravel roads.

Many of the new wells and associated roads could be constructed on National Forest System lands and although these roads may be constructed to a lower standard at more sensitive areas than ANF roads, the ANF works closely with developers to minimize sedimentation and water quality impacts. To avoid significant effects, site specific mitigations would be implemented. Additionally, as more wells are developed, the potential for oil spills increases. To minimize impacts that could occur from a spill, a Pollution Prevention and Spill Response Plan is filed with Pennsylvania DEP and with the ANF that provides emergency actions that would take place should a spill occur.

Based on the analysis presented above, adverse cumulative effects are likely to occur within the Meads Mill area of the Allegheny River by the year 2020 as a result of the likely zebra mussel infestation. It is unclear at this time how heavy a zebra mussel infestation would be, but depending on the rate of spread and realizing that Wabash numbers already appear very low in this section of river, even a low number of zebra mussels could result in an adverse affect to the

remaining pigtoe numbers. This affect though is not a result of ANF activities.

Wabash pigtoe Determination and Rationale

The determination made for the Wabash pigtoe after consideration of the proposed ANF activities and the implementation of Forest Plan S&G's and conservation measures within the project area is 'may impact individuals but is not likely to cause a trend toward federal listing'. The likely zebra mussel infestation from Conewango Creek is not considered in the determination because it is not an ANF activity. The following rationale as outlined on page 74 of the Forest BE, apply to this determination:

- Forest Plan standards and guidelines, as well as any site-specific mitigation measures, would be implemented during project implementation, resulting in insignificant effects from any potential ANF sediment and runoff producing activity, such as from dirt and gravel roads and motorized off-highway trails. The standards and guidelines in the Forest Plan were developed to minimize impacts to water resources on the ANF, and ultimately to the mussels in the Allegheny River. The basis for the rationale is the findings from the USGS mussel and habitat surveys of the Allegheny River that sediment is not impacting mussels, and therefore the continued implementation of standards and guidelines and site-specific mitigation measures would continue this level of protection from Forest Service activities.
- Forest Plan standards and guidelines, as well as any site-specific mitigation measures, would be implemented during vegetation management activities such as herbicide application. This primarily involves the implementation of buffers and the use of surfactants approved for aquatic use.
- Dirt and gravel roads, motorized off-highway vehicle trails, timber sales, and oil and gas operations will continue to be monitored to determine effectiveness of standards and guidelines or site-specific mitigation measures used to address runoff concerns. Where standards and guidelines or site-specific mitigation measures are not meeting their intent, corrective action will occur.
- Conservation measures would be implemented to provide information and education to the boating public to maintain and/or further increase public awareness about the prevention of zebra mussel introduction into the Allegheny Reservoir and Allegheny River. Periodic trailer and water vessel screening at high risk boat launches on the Allegheny Reservoir will continue to heighten public awareness about preventing zebra mussel introduction.
- Dirt and gravel roads, motorized off-highway vehicle trails, timber sales, and oil and gas operations will continue to be monitored to determine effectiveness of standards and guidelines or site-specific mitigation measures used to address runoff concerns. Where standards and guidelines or site-specific mitigation measures are not meeting their intent, corrective action will occur.
- A large number of anticipated private oil and gas developments could occur on National Forest System Lands and potential adverse effects will be reduced or minimized through close administration by the ANF, as well as the implementation of site specific mitigations

and guidelines as outlined previously. The developments are not a federal action, but rather an exercising of mineral rights by private lease holders.

- Sedimentation and potential adverse effects to water quality resulting from timber harvest would be minimized through implementation of State Best Management Practices, Forest Plan standards and guidelines and site specific mitigation measures during individual project implementation.

LONGHEAD DARTER (*Percina macrocephala*)

The background, including distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for this darter, is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS -2007, 175 to 177).

Project Area Habitat

Medium to large streams and rivers with fast, rocky riffles and large pools are preferred habitat of longhead darter. The most recent collection was made in the Brokenstraw Creek at Buckaloons (Turner 2005) which is in the project area. The Allegheny River provides an abundance of habitat and they have been documented on several occasions just outside the project boundary

Direct and Indirect Effects

Alternatives 1 - 3

The potential direct and indirect effects to the longhead darter are similar to those described under the bluebreast darter as discussed in the Forest BE (see pages 167 to 170), since the species' primary habitat is larger streams and rivers, and considering water quality is protected through Forest Plan Standards and Guidelines.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects:

Alternatives 1 - 3 - Water quality and potential habitat could be affected by timber harvest, some reforestation and/or NNIS treatments such as herbicide and fertilizer applications, and road construction activities under the proposed treatments in Alternatives 2 and 3, along with oil and gas development and zebra mussels (associated with boat launches) if these activities are not properly designed, located, or buffered. However, Forest Plan S&G's discussed throughout this BE will be implemented to minimize impacts and protect aquatic and riparian habitats.

Proposed activities designed to provide beneficial effects and maintain water quality over the long-term under Alternatives 2 and 3 include:

- Road maintenance (improving road-runoff management).
- Limestone surfacing (armoring running surfaces to decrease sediment formation and movement).
- Road decommissioning (remove non-point sources of sedimentation and restores habitat and natural drainage patterns within these corridors).

Suitable habitat will continue to be widespread and occur in all larger streams. As a result, there are no significant direct, indirect or cumulative effects to the Longhead darter or its habitat anticipated.

Longhead darter Determination and Rationale

Alternative 1 – No action – no impact, although proposed treatments to improve water quality such as limestone surfacing, road decommissioning, and road reconstruction will not be implemented. Therefore, the beneficial effects will not occur to aquatic habitat.

Alternatives 2 & 3 - Since 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and guidelines will maintain water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain or improve associated darter habitat, 3) Suitable darter habitat will continue to be widely available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

The probability is low that individuals or local populations would be impacted by the projected increase in oil and gas activity, specifically the amount of dirt and gravel roads to be constructed. The effects will depend on the amount and location of these roads.

A ‘No impact’ determination is made for the longhead darter under all alternatives. The Mead’s Mill project ‘will not cause a trend toward the federal listing of this species’ with implementation of Forest Plan S&G’s.

TIPPECANOE DARTER (*Etheostoma tippecanoe*)

The background, including distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for this darter, is discussed in the ANF Biological Evaluation (BE) and is incorporated here by reference (USDA-FS 2007, 181 to 182).

Project Area Habitat

The Tippecanoe darter prefers riffle areas 4 to 20 inches deep in clean rivers and large creeks with a bottom of pea-sized clean gravel and a high bottom current velocity (Wild Resource Conservation Fund 1995). This species has been recently collected in the Allegheny River (Turner 2005, WPC 2003) and Brokenstraw Creek (Turner 2005) where an abundance of habitat exists within the project area.

Direct and Indirect Effects

Alternatives 1 - 3

The potential direct and indirect effects to the Tippecanoe darter are similar to those described under the bluebreast darter as discussed in the Forest BE (see pages 167 to 170), since the species’ primary habitat is larger streams and rivers, and considering water quality is protected through Forest Plan Standards and Guidelines.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Water quality and potential habitat could be affected by timber harvest, some reforestation and/or NNIS treatments such as herbicide and fertilizer applications, and road construction activities under the proposed treatments in Alternatives 2 and 3, along with oil and gas development and boat launching if these activities are not properly designed, located, or buffered. However, Forest Plan S&G's discussed throughout this BE will be implemented to minimize impacts and protect aquatic and riparian habitats.

Proposed activities designed to maintain or improve water quality over the long-term under Alternatives 2 and 3 include:

- Road maintenance (improving road-runoff management).
- Limestone surfacing (armor running surfaces to decrease sediment formation and movement).
- Road decommissioning (remove non-point sources of sedimentation and restores habitat and natural drainage patterns within these corridors).
- Measures to minimize or eliminate the threat of zebra mussels will continue to be implemented.

Suitable habitat will continue to be widespread and occur in all existing watersheds. As a result, there are no significant direct, indirect or cumulative effects to the Tippecanoe darter or its habitat anticipated.

Tippecanoe darter Determination and Rationale

Alternative 1 – No action – no impact, although proposed treatments to improve water quality such as limestone surfacing, road decommissioning, road reconstruction will not be implemented. Therefore, the beneficial effects will not occur to the aquatic habitat.

Alternatives 2 & 3 - Since 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and guidelines will maintain water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain or improve associated darter habitat, 3) Suitable darter habitat will continue to be widely available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

The probability is low that individuals or local populations would be impacted by the projected increase in oil and gas activity, specifically the amount of dirt and gravel roads to be constructed. The effects will depend on the amount and location of these roads.

A 'No impact' determination is made for the Tippecanoe darter under all alternatives. The Mead's Mill project 'will not cause a trend toward the federal listing of this species' with implementation of Forest Plan S&G's.

BUTTERNUT (*Juglans cinerea*)

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for this tree, is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 254 to 260).

Project Area Habitat

Butternut occupies a mesic-hydric forest in sun to partial shade. They have been documented within the project area but none were found during surveys of the stands proposed for vegetation management. There are approximately 43 known butternut trees found on federal lands within the project area. There are 2 trees in the Buckaloons Campground, 12 near Camp Birdsall Eddy and 31 near the Beanfields area. Grapevines are problems for 8 of these trees, 2 in Buckaloons, 2 near Birdsall Eddy and 4 in the Beanfields. A release from the vines would help their health. Additionally, NNIS will be treated around these trees.

Direct and Indirect Effects

All Alternatives

Management activities proposed in Table 1 that are considered to have negligible direct (species related) or indirect (habitat related) impacts based on suitable habitat (open canopy, moist to wet conditions) and/or the methods used to accomplish those activities (hand tools) include: reforestation activities (fencing, planting, tree shelters, and fertilization only), wildlife habitat improvements and non-native invasive species control (manual/mechanical) (see ANF BE pages 256-257 for additional discussion (USDA-FS 2007)).

Management activities proposed in Table 1 that are considered to have either potential direct or indirect adverse impacts include: timber harvest (if a butternut is cut/damaged by mistake), reforestation (herbicide application), non-native invasive species control (herbicide treatment), road construction (new corridor), road construction (existing corridor), road decommissioning, pit expansion and new pit development. Potential impacts from timber harvest, reforestation and non-native invasive species treatment activities include direct mortality (trampling/removal of plant during implementation, herbiciding extant treed). Since butternut is a shade intolerant species it would benefit from increased light conditions. Potential impacts from road construction existing corridor or new corridors, road decommissioning, gravel pit expansion or new development include trampling/disturbance, removal – access for collection (direct mortality), changes in local hydrology from soil compaction/removal, and non-native invasive species introduction and/or spread via equipment (habitat alteration). Except for the 9.0 acres of pit expansion for road construction activities and the up to 0.6 miles of road construction (new corridor)(alt. 2) under the action alternatives, no loss in forested habitat is anticipated. Areas where activities are proposed have been surveyed and this species has not been documented, however, if it was found during implementation appropriate measures will be taken to conserve this species (see page 212 -213 of the ANF BE USDA-FS 2007 for a compilation of standards and guidelines or the Forest Plan sections 2080, 2400 and 2600 USDA-FS 2007a). As a result there are no anticipated direct or indirect impacts to this species under any alternative.

Proposed activities within Table 1 that are beneficial to this species or its habitat include release, fencing, lessening the impacts from non-native invasive plant species through manual/mechanical or herbicide treatment and road decommissioning which may lessening the

impacts to habitat from the introduction/spread of non-native invasive species along road corridors and also limiting access to plant collection/disturbance.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Based on topographic maps, vegetation types and conditions, and aerial photographs, the CE area has a large protected river valley and river islands which are particularly suited for the butternut. However, roughly 7 percent of the CE area provides opening habitat (including private property) and may also provide suitable habitat having a lack of competing (woody) vegetation. In several riparian areas, habitat may exist in the semi-open savannah/ orchard areas along the streams and lower slope elevations. This habitat type is very limited within both the project and cumulative effects areas.

It is estimated that up to 7 % of the CE (20,343-acre) area will be final harvested over the next two decades. During previously approved projects the butternut was not found during field surveys. As future projects are developed, field surveys will search for RFSS including the butternut. If the species is found in these projects or anywhere on the Forest, it will be protected and the habitat enhanced. The Forest Plan provides direction for the protection and enhancement of habitat for TES species, as well as, protecting unique plant communities (USDA-FS 2007a, 80 to 89).

Forest Plan Standards and Guidelines and/or site mitigation measures to conserve this species would be implemented, and approved activities will not have significant adverse impacts to this species or its habitat. In addition, OGM may occur on up to 16% of the CE, increasing non-forest habitat from 19% to 26% within the CE area. Oil and gas developers on private land do not search for the butternut may cut it just as any other tree within designated rights-of-way or well pads. Consequently, there is a chance that individuals could be impacted on private land regarding oil and gas developments. Activities on non-Forest Service administered land within the cumulative effects boundary that have the potential to impact these species include: direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration/loss from timber harvest, non-native invasive plant species, housing development, roads, gravel pits, trails or oil and gas development. There is no information regarding the presence of butternut on private land in the CE area. Currently, forestland owners on private property within the CE area appear to be employing Pennsylvania Best Management Practices.

The greatest impact to butternut viability is from butternut canker (USDA-FS 2007, 255). Due to the land conditions (forested, streamside, steep terrain) within the CE area and amount of non-federal land within the CE area (approximately 51% of CE area), and implementation of Forest Plan standards and guidelines and/or site mitigation measures if this species is found during, there are no adverse cumulative impacts anticipated to this species under any alternative.

Butternut Determination and Rationale

Alternative 1 – ‘no impact’ from the Mead’s Mill Project under this alternative. No butternut trees were found in the previously approved 25 acres of shelterwood removal.

Alternative 2 and 3: Since 1) Butternut trees are found within the CE area but no butternut trees were found during stand surveys where timber harvest treatment is proposed, 2) individual trees for this species are proposed for release from grapevine envelopment, 3) suitable habitat is limited within both the project and CE area and 4) Forest Plan S&G's will be implemented to conserve suitable habitat.

The determination for this species is 'may impact individuals but will not cause a trend toward the federal listing of this species' with implementation of Forest Plan S&G's.

WHITE TROUT-LILY (*Erythronium albidum*) and AMERICAN GINSENG (*Panax quinquefolius*)

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for these plants, is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 233 to 240).

Project Area Habitat

The white trout-lily and American ginseng are found in mature, deciduous, mesic forest, under shade. The lily was found in 2 NNIS treatment sites in Compartment 203/Stand1 at the Beanfields and Compartment 201/Stand 18 at Buckaloons. American ginseng plants were found during stand surveys where timber treatments are proposed in Compartment 207/Stand 4.

Direct and Indirect Effects

All Alternatives

Management activities proposed in Table 2 that are considered to have negligible direct or indirect impacts based on suitable habitat and/or the methods used to accomplish those activities include manual implementation of reforestation activities, wildlife habitat improvements and NNIS treatments (see ANF BE pages 236-237 for additional discussion (USDA-FS 2007)).

Management activities proposed in Table 2 that are considered to have either potential direct or indirect adverse impacts include: timber harvest, reforestation (herbicide application, site preparation, release cut), non-native invasive species control (herbicide treatment), road construction (new corridor), road construction (existing corridor), road decommissioning, pit expansion and new pit development.

Potential impacts from timber harvest, reforestation and non-native invasive species treatment activities include direct mortality (trampling/removal of plant during implementation, herbiciding extant plants) and habitat alteration due to the loss of the overstory canopy. No overstory harvests are proposed at any of these locations. Suitable growing conditions are expected to be maintained.

Potential impacts from road construction – existing corridor or new corridors, road decommissioning, gravel pit expansion or new development include trampling/disturbance, removal – access for collection (direct mortality), changes in local hydrology from soil compaction/removal, and non-native invasive species introduction and/or spread via equipment (habitat alteration). Except for the 9.0 acres of pit expansion for road construction activities and the up to 0.6 miles of road construction on new corridor (Alt. 2), no loss in forested habitat is

anticipated. Areas where road activities are proposed have been surveyed and these species have not been documented, however, if they are found during implementation appropriate measures will be taken to conserve these species (see page 212 -213 of the ANF BE USDA-FS 2007 for a compilation of standards and guidelines or the Forest Plan sections 2080, 2400 and 2600 USDA-FS 2007a). As a result there are no anticipated direct or indirect impacts to these species under any alternative.

The proposed activity within Table 2 that is beneficial to these species or their habitat will decrease the impacts from non-native invasive plant species through manual/mechanical or herbicide treatment.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Suitable habitat for both species exists on the upland slopes as well as forested floodplain habitat along medium to large streams found within the project and cumulative effects (CE) analysis area including sections of Brokenstraw Creek and the Allegheny River. It is estimated that up to 7 % of the CE area will be final harvested over the next two decades within the 20,343-acre CE area. In the short-term, these forest conditions do not provide suitable habitat. Over the long-term however, suitable growing conditions are expected to return to these areas as the forest grows and matures. Partial harvest areas may also change light regimes in the short term, but habitat will remain in the long term.

Forest Plan Standards and Guidelines and/or site mitigation measures to conserve these species would be implemented for proposed, planned or approved activities if these plants were found. In addition, OGM may occur on 12 to 16% of the CE, increasing non-forest habitat from 19% to 26% within the CE area.

Activities on non-Forest Service administered land within the CE boundary that have the potential to impact these species includes: direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration/loss from timber harvest, non-native invasive plant species, housing development, roads, gravel pits, trails or oil and gas development. Due to the land conditions (forested, streamside, steep terrain) within the CE area and amount of non-federal land within the CE area (approximately 51% of CE area) there are no adverse cumulative impacts anticipated to these species under any alternative.

White trout-lily and American ginseng Determination and Rationale

Alternative 1 – ‘no impact’ from the Mead’s Mill Project under this alternative. No white trout-lilies or American ginseng were found in the previously approved 25 acres of shelterwood removal.

Alternative 2 and 3: Since 1) Both species were found within the project area but only ginseng was found during stand surveys where timber harvest treatment is proposed, 2) there are 2 documented records for the project area for the lily and NNIS treatment is the only proposed activity near their location, 3) suitable habitat is limited within both the project and CE area and 4) Forest Plan S&G’s and project design features will be implemented to conserve suitable habitat or the species if they are found.

SPECIES WITH SUITABLE HABITAT BUT PRESENCE NOT DOCUMENTED

MAMMALS

NORTHERN FLYING SQUIRREL (*Glaucomys sabrinus macrotic*)

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for sensitive mammals, is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 207 to 210).

Project Area Habitat

Forest Plan direction emphasizes a variety of forest types (USDA-FS 2007a, 1 to 14) including providing a conifer component on a minimum of 10% of the ANF (USDA-FS 2007a, 19). In 2005 the northern flying squirrel was captured during nest box surveys on State Game Lands (SGL) 29 within the ANF which is outside the project area. There are no nest boxes currently in the project area and northern flying squirrels have not been documented in the Mead's Mill project area. There is no old growth in the project area.

Direct and Indirect Effects

Alternative 1

Approximately 25 acres of previously approved final harvest are scheduled under the no action alternative but they will not affect preferred habitat and it is anticipated there will be no direct or indirect impacts to the northern flying squirrel. The hemlock woolly adelgid has the potential to decrease habitat by reducing the hemlock in the pure and mixed conifer/hardwood stands. However, pro-active efforts are under way on the ANF, including working with Forest Pest management and other agencies, to find methods in addressing the concern.

Alternatives 2 & 3

The Mead's Mill project supports up to 7% conifer (as conifer stands and mixed hardwood/conifer stands) that may provide suitable habitat. This habitat is mostly located in the Grunder Run and Morrison Run drainages. There will be no reduction in available suitable habitat.

Under Alternatives 2 and 3, proposed overstory removals or shelterwood removals will change up to 600 and 572 acres respectively of mature hardwood forest habitat into early structural forest habitat within the project. Some of these areas will retain conifer inclusions as reserve trees and ¼ acres wildlife clumps. In the short-term, these forest conditions will not provide suitable habitat. Over the long-term however, suitable growing conditions are expected to return to these areas as the forest grows and matures. Treatments do occur near riparian areas, but Forest Plan S&G's protect these areas, and riparian areas are given preferential treatment.

In addition to 9.0 acres of pit expansion for road construction activities and the up to 0.6 road construction - new corridor (Alt. 2 only) under the action alternatives, no other loss in forested habitat is anticipated. As a result, there are no anticipated direct or indirect impacts to this species or its habitat under any alternative as habitat in the mid to late structural forest will remain on over 70% of the project area.

Under the action alternatives, up to 25 nest boxes will be placed in suitable habitat and monitored annually during the life of the project (5 to 10 years). While the proposed structures would provide suitable nesting habitat for this species, the primary effect of this activity will be increased knowledge related to the distribution and habitat for this species. The following project design criteria will be employed under all alternatives:

- Maintain the existing conifer component, and retain all hemlock and white pine > 18" DBH.

Although suitable habitat would be altered, the implementation of this project design criteria and Forest Plan S&G's that protect snags and den trees as well as protect riparian corridors, there are no anticipated direct or indirect impacts to this species under any alternative.

Cumulative impacts

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: While this species or its habitat could be adversely affected by OGM development (the loss of habitat), future infestation of the hemlock woolly adelgid (HWA) poses the greatest risk to this species on a landscape scale. The impact to the large hemlocks (especially) along the stream bottoms could be severe to northern flying squirrels (Steele et al. 2004) if the HWA reaches the ANF. Up to 50% of the mature hemlock on the ANF could be lost without an effective method for controlling the HWA. Development of private mineral rights in suitable northern flying squirrel habitat also has the potential to cause adverse impacts to forest habitat. These activities could increase the amount of non-forest habitat from 11% to 17% in the CE area over the next 20 years.

Past and future federal actions within the CE area involving vegetation management, road construction activities and private land vegetation management may alter suitable habitat, but Forest Plan S&G's favor conifer species and the conifer/deciduous forest will remain relatively intact on federal land. In addition, at least 70% of the habitat will remain in mature forest habitat in the CE area.

Northern flying squirrel Determination and Rationale

The state has conducted relatively extensive monitoring across Pennsylvania and only one location of the northern flying squirrel has been documented in NW Pennsylvania. The loss or reduction of the conifer component could be detrimental to this species because its primary habitat consists of mature mixed coniferous/deciduous closed canopy forest. The long-term perpetuation of the conifer component where soils are suitable is in the best interest of the species. The devastating effect of the HWA on hemlock Forest-wide elevates the importance of maintaining conifer across the landscape in order to help provide habitat for the species and its use of large diameter conifer trees (as dens). Potential habitat will be maintained and enhanced as additional den sites are provided through implementation of the project design feature and Forest Plan S&G's. Since the project treatments are located primarily in upland terrain, potential 'prime' habitat in the form of late-structural bottomland mixed conifer/deciduous forest will remain relatively intact in the project and CE analysis area under all alternatives.

Alternative 1 - No Action – no impact anticipated, except for the potential impacts from hemlock wooly adelgid. The 25 acres of previously approved activity is not within suitable habitat.

Alternatives 2 and 3 - are expected to have no impact on individuals but suitable habitat will be altered. Implementation of project design feature and Forest Plan S&G's are expected to maintain suitable habitat and important habitat components across the project area and CE area. Nest boxes may provide additional den habitat and monitoring those boxes may provide needed information on species status.

The determination for this species is 'no impact and will not cause a trend toward the federal listing of this species' with implementation of Forest plan S&G's.

MOLLUSKS - The following 8 species are evaluated as a group: Creek heelsplitter (USDA-FS 2007, 183), Rabbitsfoot (USDA-FS 2007, 194 to 195), Rainbow (USDA-FS 2007, 195 to 196), Snuffbox (USDA-FS 2007, 200 to 201), White heelsplitter (USDA-FS 2007, 204 to 205), Round pigtoe (USDA-FS 2007, 198 to 199), Long-solid (USDA-FS 2007, 187 to 188), and the Threeridge (USDA-FS 2007, 201 to 202). These mussels will be discussed as a group since they all have suitable, unoccupied habitat within the Mead's Mill project area and are a good indicator of habitat integrity and water quality, and depend on intact, well-functioning riparian and aquatic ecosystems. For information on the Rayed-bean and Sheepnose, see the introductory section on page 4 above. These two species will not be discussed any further in this document.

8 mussel species

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for these species is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 183 to 206).

CREEK HEELSPLITTER (*Lasmigona compressa*)

Project Area Habitat

Numerous surveys in the Allegheny River by USGS failed to yield any live specimens. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

RABBITSFOOT (*Quadrula cylindrica*)

Project Area Habitat

Based on its habitat description, the Allegheny River appears to be the only waterway on the ANF that provides suitable habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

RAINBOW (*Villosa iris*)

Project Area Habitat

Based on its habitat description, the Allegheny River appears to be the only waterway on the ANF that provides suitable habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

SNUFFBOX (*Epioblasma triquetra*)

Project Area Habitat

Based on its habitat description, the Allegheny River appears to be the only waterway on the ANF that provides suitable habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

WHITE HEELSPLITTER (*Lasmigona complanata*)

Project Area Habitat

Based on its habitat description, the Allegheny River and other waterways on the ANF appear not to provide an abundance of preferred habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

ROUND PIGTOE (*Pleurobema sintoxia*)

Project Area Habitat

Based on its habitat description, the Allegheny River and Tionesta Creek appear to be the only waterway on the ANF that provides suitable habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

LONG-SOLID MUSSEL (*Fusconaia subrotundra*)

Project Area Habitat

Suitable habitat appears to only occur in the Allegheny River, and in the lower reaches of the Tionesta Creek. Most streams on the ANF are too cold and with limited productivity to support mussel populations. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

THREERIDGE (*Amblema plicata*)

Project Area Habitat

Based on its habitat description, the Allegheny River appears to be the only waterway on the ANF that provides suitable habitat. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

Direct and Indirect Effects for 8 mussel species

All Alternatives

Impacts to the riparian and aquatic habitats were analyzed above in the Wabash pigtoe section. Impacts are similar for all species. Forest Plan S&G's will reduce or avoid impacts to the aquatic environments. No impact to these species is anticipated under any alternative. Proposed activities which may prove beneficial to maintaining or improving water quality over the long-term under Alternatives 2 and 3 include limestone surfacing (armoring running surfaces to decrease sediments), road maintenance (improving road run-off management), and road decommissioning (remove non-point sources of sedimentation and restore corridors). The level of activities directly affecting intermittent streams and their surrounding habitats as well as improvements to existing roads (road maintenance) is low. Design features and Forest Plan S&G's will protect the riparian and stream corridors.

Based on the analysis presented above, particularly the level of activities indirectly affecting stream/riparian habitat, improvements to existing roads, design features and Forest Plan S&G's

built into the project actions, there are no adverse impacts anticipated to these species under any alternative.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Forest Plan S&G's will reduce or avoid impacts to the aquatic environments. Therefore, there will likely be no impact to these species under all alternatives. Proposed activities to maintain or improve water quality over the long-term in Alternatives 2 and 3 include limestone surfacing (armor running surfaces to decrease sediments), road maintenance (improving road run-off management), and road decommissioning (remove non-point sources of sedimentation and restore corridors). The level of activities directly affecting intermittent streams and surrounding habitat and improvements to existing roads (road maintenance) is low. Design features and Forest Plan S&G's will protect the riparian and stream corridors, therefore there are no adverse impacts anticipated on these species under any of these alternatives.

Based on the analysis presented above, suitable habitat will continue to be widespread within the Allegheny River and its tributary watersheds. As a result, there are no significant direct, indirect or cumulative effects to these species or their habitats anticipated.

8 Mussel Determinations and Rational

Alternative 1 – No action – no impact, although proposed treatments to improve water quality such as limestone surfacing, road decommissioning, road reconstruction will not be implemented. Therefore, the beneficial effects will not occur to the aquatic habitat. Previously approved activities will impact only 25 acres which are over ½ mile from the Allegheny River and Forest Plan S&G's will minimize their impacts.

Alternatives 2 & 3 - Since 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and guidelines will maintain water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain mussel habitat, 3) Suitable mussel habitat will continue to be available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

A no impact determination is reached for these 8 species under these alternatives. The Mead's Mill project 'will not cause a trend toward the federal listing of these species' with implementation of the Forest Plan S&G's.

Fish - The following 8 species are evaluated as a group: Bluebreast darter (USDA-FS 2007, 167 to 170), Burbot (USDA-FS 2007, 170 to 172), Channel darter (USDA-FS 2007, 172 to 173), Gilt darter (USDA-FS 2007, 173 to 174), Gravel chub (USDA-FS 2007, 174 to 175), Mountain madtom (USDA-FS 2007, 178 to 179), Northern madtom (USDA-FS 2007, 179 to 180), and the Spotted darter (USDA-FS 2007, 180 to 181). These fishes will be discussed as a group since they all have suitable habitat within the Mead's Mill project area and are a good indicator of

habitat integrity and water quality, and depend on intact, well-functioning riparian and aquatic ecosystems.

8 fish species

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for these species are discussed in the ANF Biological Evaluation and which is incorporated here by reference (USDA-FS 2007, 167 to 181).

BLUEBREAST DARTER (*Etheostoma camurum*)

Project Area Habitat

The Allegheny River provides abundant suitable habitat for this species. No surveys were conducted specifically for this project. None have been found within the project area or CE area.

BURBOT (*Lota lota*)

Project Area Habitat

Suitable habitat on the ANF would be the Allegheny Reservoir, plus some of its tributaries. Deeper pools of the Allegheny River just downstream of Kinzua Dam may also provide suitable habitat. No surveys were conducted specifically for this project. Although suitable habitat exists for this species, it has not been documented in the Mead's Mill project area or CE area.

CHANNEL DARTER (*Percina copelandi*)

Project Area Habitat

The channel darter has been documented in the Allegheny River. Collections of this species have been made in a number of streams on the ANF but not within the project area. No surveys were conducted specifically for this project. The channel darter has not been documented within the Mead's Mill project area or CE area.

GILT DARTER (*Percina evides*)

Project Area Habitat

There is abundant suitable habitat available in the Allegheny River. No surveys were conducted specifically for this project. The gilt darter has not been documented within the Mead's Mill project area or CE area.

GRAVEL CHUB (*Erimystax x-punctata*)

Project Area Habitat

It has only been documented in the Allegheny River but not in the project area. No surveys were conducted specifically for this project. The gravel chub has not been documented within the Mead's Mill project area or CE area.

MOUNTAIN MADTOM (*Noturus eleutherus*)

Project Area Habitat

The mountain madtom inhabits small to large rivers, in fast flowing clear water over sand, gravel and rubble, often near vegetation. The mountain madtom was collected in the Allegheny River where abundant suitable habitat is available in 1995 in the area of West Hickory (WPC 2003) which is downstream of the project area. No surveys were conducted specifically for this

project. The mountain madtom has not been documented within the Mead's Mill project area or CE area.

NORTHERN MADTOM (*Noturus stigmosus*)

Project Area Habitat

The northern madtom is a fish of large streams with swift rocky riffles, commonly taken with the stonecat and the mountain madtom. It has been documented in the Allegheny River where abundant suitable habitat is present. No surveys were conducted specifically for this project. The northern madtom has not been documented within the Mead's Mill project area or CE area.

SPOTTED DARTER (*Etheostoma maculatum*)

Project Area Habitat

The spotted darters preferred habitat is medium-larger, running waters such as the Allegheny River. Based on the habitat requirements, the Allegheny River provides suitable habitat. No surveys were conducted specifically for this project. The spotted darter has not been documented within the CE area of the Mead's Mill project area.

Direct and Indirect Effects

All Alternatives

The potential effects to these species are the same as described above for the bluebreast darter.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Water quality and potential habitat could be affected by timber harvest, some reforestation and/or NNIS treatments such as herbicide and fertilizer applications, and road construction activities under the proposed treatments in Alternatives 2 and 3, along with oil and gas development and zebra mussel (associated with boat launches) if these activities are not properly designed, located, or buffered. However, Forest Plan S&G's will be implemented to minimize impacts and protect aquatic and riparian habitats.

Proposed activities designed to maintain or improve water quality over the long-term under Alternatives 2 and 3 include:

- Road maintenance (improving road-runoff management).
- Limestone surfacing (armoring running surfaces to decrease sediment formation and movement).
- Road decommissioning (remove non-point sources of sedimentation and restores habitat and natural drainage patterns within these corridors).

Suitable, abundant habitat will continue to be available in the Allegheny River for these species. As a result, there are no significant direct, indirect or cumulative effects to these species or their habitats anticipated.

8 Fish Determinations and Rationale

Alternative 1 – No action – no impact, although proposed treatments to improve water quality such as limestone placement, road decommissioning, road reconstruction will not be implemented. Therefore, the beneficial effects will not occur to the aquatic habitat.

Alternatives 2 & 3 - Since 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and guidelines will maintain water quality and native fisheries in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain associated aquatic habitat, 3) Suitable fish habitat will continue to be available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

The probability is low that individuals or local populations would be impacted by the projected increase in oil and gas activity, specifically the amount of dirt and gravel roads to be constructed. The effects will depend on the amount and location of these roads.

A 'No impact' determination is made for these fish species under all alternatives. The Mead's Mill project 'will not cause a trend toward the federal listing of these species' with implementation of Forest Plan S&G's.

INVERTEBRATES - The following 11 species are evaluated as a group: Green-faced clubtail (*Gomphus viridifrons*) (USDA-FS 2007, 183 to 185), Harpoon clubtail (*Gomphus descriptus*) (USDA-FS 2007, 186 to 187), Maine snaketail (*Ophiogomphus mainensis*) (USDA-FS 2007, 188 to 190), Midland clubtail (*Gomphus fraternus*) (USDA-FS 2007, 190 to 191), Mustached clubtail (*Gomphus adelphus*) (USDA-FS 2007, 192 to 193), Ocellated darner (*Boyeria grafiana*) (USDA-FS 2007, 193 to 194), Rapids clubtail (*Gomphus quadricolor*) (USDA-FS 2007, 196 to 197), Resolute damsel (*Coenagrion resolutum*) (USDA-FS 2007, 197 to 198), Ski-tailed emerald (*Somatochlora elongata*) (USDA-FS 2007, 199 to 200), Uhler's sundragon (*Helocordulia uhleri*) (USDA-FS 2007, 202 to 203), and the Zebra clubtail (*Stylurus scudleri*) (USDA-FS 2007, 205 to 206). These invertebrates will be discussed as a group since they all have suitable habitat within the Mead's Mill project area and CE area.

11 INVERTEBRATE SPECIES

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for these species is discussed in the ANF Biological Evaluation and is incorporated here by reference (USDA-FS 2007, 183 to 206).

GREEN-FACED CLUBTAIL (*Gomphus viridifrons*)

Project Area Habitat

It is found in clean small rocky streams forest streams with gravel-sand and lightly silted rocks. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

HARPOON CLUBTAIL (*Gomphus descriptus*)

Project Area Habitat

It is found in rapid streams containing pools. Locally abundant when found. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

RAPIDS CLUBTAIL (*Gomphus quadricolor*)

Project Area Habitat

It uses clear, medium to large swift moving streams and rivers. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

MUSTACHED CLUBTAIL (*Gomphus adelphus*)

Project Area Habitat

It uses clear, small to medium swift moving streams and rivers. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

MIDLAND CLUBTAIL (*Gomphus fraternus*)

Project Area Habitat

It has been found only in larger streams in moderate to swift currents. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

SKI-TAILED EMERALD (*Somatochlora elongata*)

Project Area Habitat

It uses water habitats, particularly wetlands, bogs, pools, wet meadows or fields. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

UHLER'S SUNDRAGON (*Helocordulia uhleri*)

Project Area Habitat

This species inhabits streams with rapids and riffles within forests. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

MAINE SNAKETAIL (*Ophiogomphus mainensis*)

Project Area Habitat

The Maine snaketail is found in clear, medium to large streams with gravel/sand substrates with riffles and areas of strong current. Nymphs can be found in areas of slow moving (near riffle/rapid sites) to swift flow. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

ZEBRA CLUBTAIL (*Stylurus scudderii*)

Project Area Habitat

The zebra clubtail inhabits clear streams with slow to swift current within forestland. Nymphs occur in sand/detritus substrate in slow-moving sections of streams. Adults can be found foraging in clearings or forest edges near streams. The Allegheny River and Brokenstraw Creek

provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

OCELLATED DARNER (*Boyeria grafiana*)

Project Area Habitat

The ocellated damner habitat has been described as clear, shallow, rocky, swift-flowing streams and large, rocky, poorly vegetated lakes (Mass. Div. of Fish. and Wild. 2004). The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

RESOLUTE DAMSEL (*Coenagrion resolutum*)

Project Area Habitat

Where this species was documented, it occurred in a larger riverine system. The Allegheny River and Brokenstraw Creek provide suitable habitat. No surveys were conducted specifically for this project. This species has not been documented within the Mead's Mill project area or CE area.

Direct and Indirect Effects

Alternatives 1 - 3

The potential effects to these species are the same as described above for the bluebreast darter.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Water quality and potential habitat could be affected by timber harvest, some reforestation and/or NNIS treatments such as herbicide and fertilizer applications, and road construction activities under the proposed treatments in Alternatives 2 and 3, along with oil and gas development and boat launching if these activities are not properly designed, located, or buffered. However, Forest Plan S&G's discussed throughout this BE will be implemented to minimize impacts and protect aquatic and riparian habitats.

Proposed activities designed to maintain or improve water quality over the long-term under Alternatives 2 and 3 include:

- Road maintenance (improving road-runoff management).
- Limestone surfacing (armoring running surfaces to decrease sediment formation and movement).
- Road decommissioning (remove non-point sources of sedimentation and restores habitat and natural drainage patterns within these corridors).

Suitable habitat will continue to be widespread and occur in all existing watersheds. As a result, there are no significant direct, indirect or cumulative effects to these species or their habitats anticipated.

Invertebrate Determinations and Rationale

Alternative 1 – No action – no impact, although proposed treatments to improve water quality such as limestone placement, road decommissioning, road reconstruction will not be

implemented. Therefore, the beneficial effects will not impact to aquatic habitat. Previously approved activities will impact only 25 acres which are over ½ mile from the Allegheny River and Forest Plan S&G's will minimize their impacts.

Alternatives 2 & 3 - Since 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and guidelines will maintain water quality and this is expected to maintain or improve associated invertebrate habitat, 3) Suitable invertebrate habitat will continue to be widely available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

The probability is low that individuals or local populations would be impacted by the projected increase in oil and gas activity, specifically the amount of dirt and gravel roads to be constructed. The effects will depend on the amount and location of these roads.

A 'No impact' determination is made for these invertebrate species under all alternatives. The Mead's Mill project 'will not cause a trend toward the federal listing of these species' with implementation of Forest Plan S&G's.

PLANTS

Background: The distribution and abundance, status, habitat, threats, direct impacts, and indirect impacts for these species are discussed in the ANF Biological Evaluation and are incorporated here by reference (USDA-FS 2007, 211 to 273).

The plants are analyzed according to their habitat breakdown in the Forest-wide BE. It should be noted that many of the plant's primary habitats are either riparian or wetland, which is given preferential treatment under the Forest Plan and S&G's are implemented to protect this type of habitat. Some plants may occur in openings or upland forest as well as inclusions in wet areas. Forest plan S&G's gives preferential treatment to these areas and unique plant communities will be protected using reserve areas or other guidelines. The habitat for these plants may be altered but sufficient habitat remains in the short term in the remainder of the project area and in the long term areas will return to a forested condition in most areas.

Non-Forest (Xeric) (USDA-FS 2007, 214 to 219)

AMERICAN FEVER-FEW (*Parthenium integrifolium*) (USDA-FS 2007, 214 to 219)

Project Area Habitat

Although this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed and is considered to be light (sandy) well-drained dry soil in open canopy. This species is shade intolerant. There are numerous openings within the project area but this species was not found.

Direct and Indirect Effects

Alternative 1

There will be no direct or indirect impacts attributed to this alternative. There are no activities under this alternative that would cause a direct or indirect impact. The previously approved activities can be minimized by Forest Plan S&G's.

Alternatives 2 & 3

Activities that are considered to have either potential direct or indirect adverse effects to American fever-few or its habitat include: burning, gravel pits (development and/or expansion), herbicide treatment, intensive use areas, road construction existing corridor, road construction new corridor, road decommissioning, road reconstruction, and wildlife opening creation. While these activities are proposed under these alternatives, impacts can be minimized by implementing Forest Plan S&G's and the appropriate design criteria. Surveys can be conducted prior to burning or implementing any of the construction activities listed above.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects:

Activities Proposed on ANF Lands - Activities that have the potential to adversely affect American fever-few or its habitat are discussed under the direct and indirect effects section. If plants are found, appropriate measures will be taken to protect/conservate this species. Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented.

Activities on Non-National Forest System lands within the Cumulative Effects Boundary -

Threats to this species on non-Forest Service land within the cumulative effects boundary include: direct mortality from over-collection of plants or plant parts for medicinal uses and aesthetics, habitat alteration from encroachment by woody vegetation and/or invasive plant species, nutrient enrichment (fertilizers), housing development, roads, gravel pits, trails, or oil and gas development.

American fever-few Determination and Rationale

A 'may impact individuals, but no alternative is likely to cause a trend toward federal listing or loss of viability' determination is made for American fever-few under all alternatives. This determination is based on the following rationale:

- Known populations occur on private land within the ANF proclamation boundary.
- If plants or populations are found on ANF administered land, Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented to conserve this species.
- Habitat and species protection/conservation on private land is regulated under Chapter 45 - Conservation of Pennsylvania Native Wild Plants.

Non-Forest (Hydric) (USDA-FS 2007, 219 to 233)

CREEPING SNOWBERRY (*Gaultheria hispidula*) (Hayes, 2001a, 27pages)

Project Area Habitat

Habitat for this species is generally best described as bogs and wet woods, where it may occur on a variety of substrates including downed logs, stumps, mosses, mud and bare ground. All stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed. Although creeping snowberry is not known to occur within the project area, suitable habitat does occur at scattered locations.

ROUGH COTTON-GRASS (*Eriophorum tenellum*) (USDA-FS 2007, 221 to 222)

Project Area Habitat

Habitat for this species is generally described as bogs and swamps (Gleason 1952). Such areas are generally hummocky with sphagnum moss. All stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed. Although rough cotton grass is not known to occur within the project area, suitable habitat does occur.

THREAD RUSH (*Juncus filiformis*) (USDA-FS 2007, 224 to 227)

Project Area Habitat

Thread rush occupies a variety of moist or wet habitats including sandy shores of streams and lakes, bogs and alpine meadows (Gleason 1952). All stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed. Although thread rush is not known to occur within the project area, suitable habitat does occur.

WIEGAND'S SEDGE (*Carex wiegandii*) (USDA-FS 2007, 227 to 233)

Project Area Habitat

It is most often found in acidic soils of drier shrubby, sometimes disturbed margins of acidic sphagnum bogs or poor fens. It occurs in both stable natural communities with infrequent disturbance such as bogs and poor fens, and dynamic habitats such as successional areas. All stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed. Although Wiegand's sedge is not known to occur within the project area, suitable habitat does occur.

SWEET-SCENTED INDIAN-PLANTAIN (*Hasteola suaveolens*) (USDA-FS 2007, 223 to 224)

Project Area Habitat

The species appears to require some disturbance, in that it grows along banks of dynamic riverine habitats that are subject to scour and flooding. Sweet-scented Indian plantain may depend upon the bare soil exposed by frequent flooding for seed germination. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

BOREAL BOG SEDGE (*Carex magellanica* spp. *Irrigua*) (USDA-FS 2007, 219 to 220)

Project Area Habitat

Boreal bog sedge occurs in acid swamps and sphagnum bogs from Newfoundland to Alaska, south in our range to Connecticut, Pennsylvania, Michigan, and Minnesota (Gleason and Cronquist 1991). While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

STALKED BULRUSH (*Scirpus pedicellatus*) (USDA-FS 2007, 222 to 223)

Project Area Habitat

It occurs along the Allegheny River at the Pennsylvania Fish and Boat Commission river access area in Tionesta (CMNH 2004) in a seep along the edge of the river. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations.

Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

QUEEN-OF-THE-PRAIRIE (*Filipendula rubra*) (USDA-FS 2007, 220)

Project Area Habitat

The species is found in moist meadows, thickets, and roadsides; scattered; native, but also escaped from cultivation (Rhoads and Block 2000). There are two known populations at Brookston which occurs in a wet drainage area adjacent to road and at Loleta where a population occurs in a wet meadow and roadside. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Mature Mixed Deciduous Forest (Mesic) (USDA-FS 2007, 241 to 247)

MOUNTAIN WOOD FERN (*Dryopteris campyloptera*) (USDA-FS 2007, 241)

Project Area Habitat

Suitable habitat (mature mixed deciduous forest) is broadly distributed and abundant across the ANF. Small habitat gaps may occur as non-forested areas/open canopy areas. On the ANF it has been found in a red pine stand. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

HOOKER'S ORCHID (*Platanthera hookeri*) (USDA-FS 2007, 241 to 247)

Project Area Habitat

It can be found in semi-shade in coniferous woods, especially in well-drained soil of a sandy texture; occasionally reported from beech-sugar maple woods. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Mature Mixed Deciduous (Mesic) (USDA-FS 2007 247 to 253)

CHECKERED RATTLESNAKE PLANTAIN (*Goodyera tessellata*) (USDA-FS 2007, 247 to 253)

Project Area Habitat

Checkered Rattlesnake Plantain is a woodland species typically found growing in upland coniferous or mixed deciduous/coniferous forest. It is shade tolerant. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Mature Mixed Deciduous (Mesic/Hydric) (Sun to Partial shade) (USDA-FS 2007, 253 to 254)

BRISTLY BLACK CURRANT (*Ribes lacustre*) (USDA-FS 2007, 253 to 254)

Project Area Habitat

It can grow in semi-shade (light woodland) or no shade (PFAF 2004). In sunlight it grows erect, but in shade, branches are often reclining or trailing. Bristly black currant occurs in woods, forests, and shrublands. While this species is not known to occur within the project area, suitable

habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Mature Mixed Deciduous (Mesic/Hydric) (Partial shade to shade) (USDA-FS 2007, 260 to 268)

BARTRAM SHADBUSH (*Amelanchier bartramiana*) (USDA-FS 2007, 260 to 261)

Project Area Habitat

Bartram shadbush can be found in swamps, sphagnum bogs, peaty thickets, moist woods, swamps, and stream banks. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

CANADA YEW (*Taxus canadensis*) (USDA-FS 2007, 261 to 262)

Project Area Habitat

The Canada Yew occupies humid, continental climates; in cool, rich, damp woods and wooded swamps; on banks; along bog margins and ravines, growth is best in at least partial shade. Two ANF locations are on large rocks under a mature mixed deciduous canopy that are not accessible by deer. A third location is in a riparian corridor with a mixed deciduous canopy. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

RED CURRANT (*Ribes triste*) (USDA-FS 2007, 263 to 268)

Project Area Habitat

It has been found at two locations during a survey in a bottomland wetland forest in 2000 and during an OGM review in 2007. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

MOUNTAIN STARWORT (*Stellaria borealis* spp. *Borealis*) (USDA-FS 2007, 262 to 263)

Project Area Habitat

It occurs in springy wooded slopes, sphagnum swamps and stream banks. While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Mature Mixed Deciduous Forest (Hydric) (Shade)

KIDNEY-LEAVED TWAYBLADE (*Listera smallii*) (USDA-FS 2007, 268 to 273)

Project Area Habitat

Species was found on the ANF in a 'wet sphagnum/boggy opening in woods' (WPC 1989b). While this species is not known to occur within the project area, suitable habitat does occur at scattered locations. Although all stands proposed for treatment were surveyed and this species was not found on any of the sites surveyed.

Direct and Indirect Effects

Alternatives 1 - 3

The potential effects to these species are the same as described in the Forest-wide Biological Evaluation (USDA-FS 2007, 211 to 273). Forest Plan S&G's will reduce or avoid impacts to the all the potential suitable environments. These species all use a wide variety of habitats that can be found across the project area. All the activities proposed for this project have been addressed as negligible, adverse or beneficial in the Forest-wide BE and are incorporated here by reference. The level of activities directly affecting their habitats as well as improvements to existing roads (road maintenance) is low. Design features and Forest Plan S&G's will protect the various habitats.

Based on the analysis presented in the Forest-wide BE which includes design features and Forest Plan S&G's, adverse impacts to this species may be considered negligible under any of these alternatives.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Activities that have the potential to adversely affect these species or their habitats are discussed under the direct and indirect effects section of the Forest-wide BE. If plants are found, appropriate measures will be taken to protect/conservate this species. Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented. Activities on non-federal lands that have the potential to adversely affect these species include; over-collection of plants or plant parts, changes in local hydrology, habitat alteration/loss from housing development, nutrient enrichment, herbicides, road construction, invasive plant species, and oil and gas development.

Plant Determinations and Rationale

Bartram shadbush, Canada yew, bristly black currant, red currant, mountain starwort will not impact individuals, however suitable habitat may be altered but the proposed activities will not cause a trend toward federal listing with implementation of Forest Plan S&G's. The rest of the plant species in this section will not impact individuals or their habitats and the proposed activities will not cause a trend toward federal listing with implementation of Forest Plan S&G's. In addition:

- If plants or populations are found on ANF administered land, Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented to conserve this species.
- Habitat and species protection/conservation on private land is regulated under Chapter 45 - Conservation of Pennsylvania Native Wild Plants.

REPTILES

TIMBER RATTLESNAKE (*Crotalus horridus*)

Background: The distribution and abundance, status, habitat, and threats for timber rattlesnakes, is discussed in the ANF Biological Evaluation (USDA-FS 2007, 274 to 285).

Project Area Habitat

Dry oak sites in the western half of the project area provide habitat conditions preferred by the timber rattlesnake. No den sites have been found within the project area. Areas with rock outcroppings suitable for den sites occur in several locations across the project area and it is believed these areas have a high potential to provide occupied habitat.

Direct and Indirect Effects

Alternatives 1 - 3

Direct effects include mortality that may occur during implementation of timber harvest, road construction or other earth disturbing activities identified in Table 2. Activities such as new road construction or changes in road management that increase public access into den locations also have the potential to result in direct mortality through hunting, or result in increased interaction with humans, who may kill snakes. Proposed activities may also result in indirect effects, or changes in habitat conditions, with effects being both positive and negative. Adverse effects could occur if conditions at a den site are modified through either disturbance or vegetation manipulation. Whereas final harvest treatments proposed under these alternatives could increase the diversity and abundance of small mammals and ultimately improve foraging conditions. Additionally, non-commercial oak release could result in canopy gaps that open up or improve sites for basking.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Based on anticipated effects described under the bald eagle, mature forest habitat will be reduced on approximately 12% of the CE analysis area that is affected by oil and gas development and final harvest timber treatments. Cumulatively over the next 20 years, it is anticipated that up to 25% of the analysis area may be affected by some form of disturbance that could either result in harassment or harm to the timber rattlesnake or alter habitat conditions.

On the ANF, the timber rattlesnake is identified as a Management Indicator Species (MIS) and a Forest Species of Concern. As a result, the timber rattlesnake receives special management protection and is used to monitor trends of wildlife that utilize similar habitat. Specific Forest Plan direction related to this species includes protection and improvement of den sites and closure of local roads to reduce human/snake interactions. Since none of the sites proposed for treatment contain suitable den habitat, and considering public access will be restricted during any proposed new road construction, there are no proposed management activities that would increase access into suitable habitat and the potential for harassment or harm to snakes at the den sites is considered extremely remote. If logging occurs at a time when snakes are away from their dens, there is a possibility that a rattlesnake could be killed or harmed if a snake is dispersing or foraging within a treatment site when logging occurs. However for the following reasons the potential impacts from logging or oil and gas development are expected to be reduced and as a result, effects are not expected to cause a trend toward federal listing.

- There is no logging or road construction proposed in preferred foraging areas along stream bottom, or over rocky areas that could be utilized for basking.
- The Forest works closely with oil and gas development to avoid rocky areas and it is anticipated that impacts from future oil and gas development will be mitigated to reduce potential impacts.
- Roads associated with oil and gas development will be closed to public access.
- Seventy five percent or more of the project area will be unaffected by proposed timber and road activities under all alternatives.

Timber rattlesnake Determination and Rationale

Alternative 1 – ‘may impact individuals’ as a result of the Mead’s Mill Project. However, on previously approved and (future) projected projects on National Forest land or private forestland within the CE analysis area, these activities will alter foraging habitat. In addition, there is a remote chance that previously approved actions and projected projects may impact (harm or harass) foraging individuals if activities occur during the species’ active period, these actions will not cause a trend toward federal listing of this species.

Alternatives 2 or 3 – ‘may impact individuals’. Suitable foraging habitat may be altered, but this change is not likely to cause a trend toward federal listing of the species. On previously approved and projected projects on National Forest land or private forestland within the CE analysis area, these activities will alter foraging habitat. There is a remote chance that these actions may impact (harm or harass) foraging individuals if activities occur during the species’ active period.

A “May impact individuals, but no alternative is likely to cause a trend toward federal listing or loss of viability” determination is made for this species under all alternatives with implementation of Forest Plan S&G’s.

WOOD TURTLE (*Glyptemys insculpta*)

Background: The distribution and abundance, status, habitat, and threats for wood turtles, is discussed in the ANF Biological Evaluation (USDA-FS 2007, 285 to 290).

Project Area Habitat

Wooded riparian flood plains are abundant on the ANF, however, riparian flood plains that possess enough openings in the canopy to support a thick herbaceous understory may be limiting. Other limiting features include areas of sandy stream and river banks and suitable habitat that is not heavily disturbed by human recreational use. Riparian surveys have not documented the presence of this species in the Mead’s Mill project area.

Direct and Indirect Effects

Alternatives 1 - 3

This species is a good indicator of habitat integrity and water quality, and depends on intact, well-functioning riparian and aquatic ecosystems; therefore the impacts, design features, and Forest Plan S&G’s discussed under the longhead darter apply to the wood turtle as well.

The semi-open savannah/orchard habitat associated with riparian areas has the best chance to contain inclusions of suitable nesting habitat. Whether there are riparian areas, wetlands, or savannah/orchards, the proposed timber harvesting and reforestation activities in the Mead's Mill project do not occur in these habitats. The previously approved shelterwood removals along with the proposed timber harvest under Alternatives 2 and 3 have the potential to impact individuals if a harvested tree would fall on a foraging individual.

Proposed road activities and access are not anticipated to increase or encourage shooting or poaching of the turtle which is a primary threat to individuals. In addition some roads will be closed or restricted to public use and this will lessen the likelihood of road mortality. This risk will continue in roads open to the public. Threats or risks regarding direct removal of wood turtles will remain under any of the alternatives.

In addition to FP S&G's concerning water quality, guidelines will be implemented if a wood turtle is discovered during project implementation, and include the protection of its habitat home range (USDA-FS 2007a, 87)

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential cumulative effects: Activities that have the potential to adversely affect this species or its habitat is discussed under the direct and indirect effects section of the Forest-wide BE. If wood turtles are found, appropriate measures will be taken to protect/conservate this species. Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented. Activities on non-federal lands that have the potential to adversely affect these species include; over-collection of turtles, changes in local hydrology, habitat alteration/loss from housing development, nutrient enrichment, herbicides, road construction, invasive plant species, and oil and gas development.

Suitable habitat will continue to be widespread and occur in all large stream watersheds. As a result, there are no significant direct, indirect or cumulative effects to the wood turtle or its habitat anticipated.

Wood turtle Determination and Rationale

Alternative 1 – No action – may impact individuals, although proposed treatments to improve water quality such as limestone surfacing, road decommissioning, road reconstruction will not be implemented. Therefore, the beneficial effects will not occur to aquatic habitat. The previously approved shelterwood removals have the potential to impact individuals if a harvested tree would fall on a foraging individual.

Alternatives 2 & 3 - 'may impact individuals' under all alternatives if a tree being harvested under a proposed timber harvest fell on a foraging individual it could cause the death or injury to a turtle. However, impacts can be minimized by the following: 1) Management of riparian habitat (forest-wide) will focus on protection of water quality, the protection of riparian dependent species and restoring healthy forest conditions, 2) Forest Plan standards and

guidelines will maintain water quality and aquatic habitat in ANF rivers, streams, impoundments, and reservoirs and this is expected to maintain associated wood turtle habitat, 3) Suitable wood turtle habitat will continue to be widely available under all alternatives, and 4) Approved and anticipated projects (timber sales) are generally positioned in upland locations.

A “May impact foraging individuals, but no alternative is likely to cause a trend toward federal listing or loss of viability” determination is made for this species under all alternatives with implementation of Forest Plan S&G’s.

BIRDS

NORTHERN GOSHAWK (*Accipiter gentiles*)

Background: The distribution and abundance, status, habitat, threats, direct impacts and indirect impacts for the northern goshawk, are discussed in the ANF Biological Evaluation (USDA-FS - 2007, 133 to 154).

Project Area Habitat

The mature forest habitat within the Mead’s Mill project area provides many of the preferred nesting and foraging conditions including a preference for conifer (up to 7% of the project area supports conifer stands or inclusions). Field surveys failed to find any active goshawk nests in the project area.

Direct and Indirect Effects

All Alternatives

Additional discussion on the impacts of the Northern Goshawk, an MIS species, is located in Chapter 4 of the Mead’s Mill EA.

Direct effects to the northern goshawk could result from any activity that causes harm or harassment to nesting birds and any activity that occurs within active goshawk territories or any activity that creates unsuitable goshawk habitat could have adverse direct or indirect impacts. In order to reduce potential harm or harassment to nesting birds the Forest Plan includes management restrictions (S&G’s) within 1320 ft. of active nests. There are no known, active nests or territories in the Mead’s Mill project area; therefore there will be no direct impacts to the species. There are no anticipated direct impacts to the goshawk anticipated under any alternative with implementation of Forest Plan S&G’s for the protection of the species. This is regardless of when an active goshawk nest may be discovered during any phase of a project.

Indirect impacts may result from habitat change. All alternatives will maintain forested habitat (at least 67% of the area in mature forest condition) across the project area. Suitable nesting/post-fledgling habitat will be maintained over the long-term with the exception for a maximum of nine acres of gravel pit expansion or development needed for road construction activities, and up to 0.6 road construction (new corridor only under Alt. 2) under the action alternatives. There are no adverse direct or indirect impacts to the northern goshawk or its habitat anticipated under any alternative. Both action alternatives will reduce the amount of mature forest within the project area over the short term. Therefore, suitable habitat will be altered but forest habitat will remain and in the long term the forest will continue to mature and grow, providing habitat once again.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects: Anticipated non-federal actions within the analysis area include commercial timber harvest on private land and private oil and gas development on both private and National Forest System lands within the analysis area (20,343 acres). While all alternatives will result in some reduction of suitable goshawk habitat, considering approximately 70% of the CE area will be unaffected by potential cumulative effects and maintained as suitable habitat and considering they are successfully utilizing areas managed at similar levels of oil and gas and timber harvest, there are no adverse effects anticipated to this species that would reduce local viability under any alternative.

Suitable habitat will continue to be widespread and occur on over 65% of the forest in the project area. As a result, there are no significant direct, indirect or cumulative effects to the northern goshawk or its habitat anticipated.

Northern goshawk Determination and Rationale

Alternative 1 - No Action – no impact anticipated. Impacts from HWA may occur.

Alternatives 2 and 3 - Based on the analysis above, particularly the protection provided to active nests, there are no impacts anticipated on individuals, but suitable habitat will be altered under these alternatives.

The proposed activities will not impact individuals, however suitable habitat will be altered. This project will not cause a trend toward federal listing of this species with implementation of Forest Plan S&G's.

YELLOW-BELLIED FLYCATCHER (*Empidonax flaviventris*)

Background: The distribution and abundance, status, habitat, and threats for the Yellow-bellied flycatcher, are discussed in the ANF Biological Evaluation (USDA-FS -2007, 161 to 166).

Project Area Habitat

There are only a few sites that contain the four criteria identified as being required by this species. Suitable habitat is defined as having all of the following: 1) the presence of saturated soils, 2) a substantial conifer component, 3) dense undergrowth, especially sphagnum moss and 4) be at least 1.5 acres in size. No flycatchers were found at any of the sites on the ANF surveyed by the Northeast Forest Experiment Station (Stoleson and Ordiway 2003). At least 50 avian species were observed or heard during field surveys in 2002 and 2003 by district personnel, but the yellow-bellied flycatcher was not documented in the Mead's Mill project area.

Direct and Indirect Effects

All Alternatives

This species and its habitat could be adversely affected by any activity that would disturb nesting birds or modify suitable habitat conditions on private or National Forest land such as oil and gas development or timber harvest on private lands. However potential direct and indirect effects on National Forest are expected to be minimized through implementation of Forest Plan standards

and guidelines, that call for the protection of suitable habitat. Additionally much of the potentially suitable habitat for this species occurs within riparian areas, which are managed to promote natural conditions and have reduced levels of management. As a result, this is expected to further reduce potential impacts.

Cumulative Effects

The analysis boundary and time period were previously described on page 1 and 2 above.

Potential Cumulative Effects: Suitable habitat for this species has been avoided and is further protected through Forest Plan Standards and Guidelines and site specific mitigation measures. Further, all stands proposed for treatments were surveyed and none of the sites include the habitat conditions preferred by this species. As a result, there are no cumulative effects to this species anticipated under any alternative.

Yellow-bellied flycatcher Determination and Rationale

Alternatives 1 - 'a 'no impact' determination is made for this alternative. Only 25 acres of previously approved activities will occur and these acres are not near any habitat that would meet the 4 requirements, so with implementation of Forest Plan S&G's and design criteria, impacts to this species or its habitat will be negligible.

Alternatives 2 and 3 - 'may impact individuals but is not likely to cause a trend towards federal listing'. Oil and gas impacts may occur closer to suitable habitat on both federal and private lands as well as timber harvest on private lands. The implementation of Forest Plan S&G's and project wide design features will ensure that proposed timber harvests, herbicide and fertilizer applications near watercourses will not directly or indirectly impact this species or its habitat under either action alternative on federal lands.

- Suitable habitat for this species will be protected through Forest Plan standards and guidelines
- Over 50% of potentially suitable habitat occurs within riparian areas that are specifically managed to provide conditions preferred by the yellow-bellied flycatcher
- Resource specialists on the ANF work closely with OGM developers to avoid or mitigate impacts to suitable habitat that may occur from future oil and gas development.

Based on the analysis and the rationale presented above, a "may impact individuals, but no alternative is likely to cause a trend toward federal listing" determination is made for this species.

SPECIES WITH NO SUITABLE HABITAT

MOUNTAIN BROOK LAMPREY (*Ichthyomyzon greeleyi*)

Background: The distribution and abundance, status, habitat, and threats for the Mountain brook lamprey, are discussed in the ANF Biological Evaluation (USDA-FS 2007, 177).

Project Area Habitat

This species occurs in gravel riffles and sandy runs of clean, clear, high-gradient streams. No streams within the project provide suitable habitat for this species based on stream size, depth

and physical structure. To date, it is only known to occur within the Clarion River drainage on the ANF. The mountain brook lamprey has not been documented within the CE area of the Mead’s Mill project area.

Direct, Indirect and Cumulative Effects

This species is not known to occur within the project area. Additionally, there is no suitable habitat for this species. Further, all sites proposed for treatment were surveyed and none of the sites include the habitat conditions preferred by this species. As a result, there are no direct, indirect or cumulative effects to this species anticipated under any alternative.

Mountain brook lamprey Determination and Rationale

All Alternatives

The Mead’s Mill project will have ‘no impact’ and ‘will not cause a trend toward the federal listing of this species’. Suitable habitat is not present in the project CE.

SUMMARY OF DETERMINATIONS

Based on the above analysis, Table 5 displays the determinations reached for the species analyzed in this Biological Evaluation for the Mead’s Mill Project EA. Species marked with an asterisk (*) have no suitable habitat in the project area.

Table 5: Determinations for RFSS

Sensitive Species	Alternative 1 No Action	Alternative 2 & 3
Northern goshawk, Northern flying squirrel	No Impact	No impact to individuals, however suitable habitat will be altered but is not likely to cause a trend toward federal listing
Timber Rattlesnake, Wood turtle	No Impact	May impact individuals and is not likely to cause a trend toward federal listing with implementation of Forest Plan S&G’s,
Butternut, White trout-lily, American ginseng	No Impact	No impact to individuals and is not likely to cause a trend toward federal listing of any species with implementation of Forest Plan S&G’s.

Sensitive Species	Alternative 1 No Action	Alternative 2 & 3
Bartram shadbush, Canada yew, Bristly Black Currant, Red Currant, Mountain starwort, Bald eagle, Osprey, Yellow-bellied flycatcher, Long-solid mussel, Creek heelsplitter, Rabbitsfoot, Rainbow mussel, Round pigtoe, Snuffbox, Threeridge, White heelsplitter, Wabash pigtoe, Sheepnose, Rayed-bean, Green-faced clubtail, Harpoon clubtail, Rapids clubtail, Mustached clubtail, Midland clubtail, Ski-tailed emerald, Uhler's sundragon, Maine snaketail, Zebra clubtail, Ocellated darter, Resolute damsel, Creeping snowberry, Rough cotton-grass, Thread rush, Wiegand's sedge, Hooker's orchid, Sweet-scented Indian-plantain, Mountain wood fern, Checkered rattlesnake plantain, Boreal bog sedge, Kidney-leaved twayblade, Stalked Bulrush, Queen-of-the-prairie	No Impact	No impact to individuals, and is not likely to cause a trend toward federal listing of any species with implementation of Forest Plan S&G's.
American fever-few, Channel darter, Gilt darter, Gravel chub, Longhead darter, Spotted darter, Tippecanoe darter, Bluebreast darter, Burbot, Mountain madtom, Northern madtom	No Impact	May impact individuals but is not likely to cause a trend toward federal listing
Mountain brook lamprey*,	No Impact	No Impact

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