TRIPOLI EAST VEGETATION MANAGEMENT PROJECT
TOWNS OF LIVERMORE & THORNTON, GRAFTON CO., NH

APPENDICES F

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And

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And

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APPENDIX F1. PROBABILITY OF OCCURRENCE OF WMNF MIS FOR THE TRIPOLI EAST VEGETATION MANAGEMENT PROJECT AREA, LIVERMORE & THORNTON, NH.

WMNF MANAGEMENT INDICATOR SPECIES	MAs	TEPS STATUS	HABITAT or MA ASSOCIATIONS: (Age Class / Community Type or Special Habitat Feature)	IS SUITABLE HABITAT PRESENT WITHIN THE PROJECT AREA ?	SPECIES DOCUMENTED AND / OR SUSPECTED TO OCCUR WITHIN THE PROJECT AREA?
SONGBIRDS & GAME BIRDS & WATERFOWL					
Rufous-sided Towhee (name change to **Eastern**) *Pipilo erthrophthalmus*	3.1	None.	Regeneration and young age classes of oak or oak/pine community types.	No oak occurs in the Project Area or entire HMUs 416 & 417.	None suspected to occur in the Project Area due to no oak, or regen / young age class in the pine community type.
Northern Junco *Junco hyemalis*	3.1	None.	Regeneration and young age classes of the pine community type.	Lack of regeneration / young age class of pine community type.	Suspected could occur in other habitat types with scattered intermixed pine.
Pine Warbler *Dendroica pinus*	3.1	None.	Mature and over mature age classes of the pine community type.	Yes, minor amounts of mature pine are intermixed in spruce/fir stands.	Suspected could occur in habitat types with scattered intermixed mature pine.
Cape May Warbler *Dendroica tigrina*	2.1 9.2	None.	Mature & over mature age classes of spruce, spruce/fir & fir community types.	Mature and over-mature spruce/fir is present, but MA 9.2 is not.	Suspected could occur in mature/ over mature spruce / fir within MA 2.1.
Gray-cheeked Thrush (name change to) **Bicknell's Thrush** *Catharus bicknelli*	5.1 6.1-.2-.3. 9.1 & .3.	R9 Sensitive Species.	Communities in MAs 5.1, 6.1-.2-.3 & 9.1 &.3 will remain relatively stable, wildlife would be affected by recreational activity vs. vegetation changes.	No high elevation spruce / fir habitat or MAs 5 or 6 or 9 occur within the Project Area.	None suspected to occur within the Project Area due to no high elevation spruce / fir habitats or MAs 5 or 6 or 9.
Blackpoll Warbler *Dendroica striata*	5.1 6.1-.2-.3 9.1 & .3	None.	Communities in MAs 5.1, 6.1-2-3 & 9.1 & .3 will remain relatively stable, wildlife would be affected by recreational activity vs. vegetation changes.	No high elevation spruce / fir habitat and no MAs 5 or 6 or 9 occur within the Project Area.	None suspected to occur in the Project Area due to no high elevation spruce / fir habitat or MAs 5, 6, or 9.
Eastern Kingbird *Tyrannus tyrannus*	3.1 7.1	None.	Upland openings community: grass, forb or apple ecotones. Developed ski areas (open forest trail ecotones) in MA 7.1	Minor amount of opening habitat in HMU; no apple orchards / MAs 7.1 (ski trails) in Project Area.	Suspected could occur in Project Area due to minor amount of opening habitat in larger HMUs 416 & 417.
Eastern Bluebird *Sialia sialis*	3.1	None.	Upland openings community: grass, forb or apple ecotones. Nests in apple tree cavities and feeds in grassy openings.	Minor amount of opening habitat in HMUs but no apple orchards within the Project Area.	Suspected could occur in Project Area due to minor amount of opening habitat in larger HMUs 416 & 417.
Mourning Warbler *Oporornis philadelphia*	3.1	None.	Upland openings community: shrub forest ecotone.	Minor amount of opening habitat in HMUs but lack of upland shrub openings in Project Area.	Suspected could occur in Project Area due to minor amount of opening habitat in larger HMUs 416 & 417.
Chestnut-sided Warbler *Dendroica pensylvanica*	3.1	None.	Regeneration age class of northern hardwood and spruce/swamp hardwoods.	Lack of regeneration age class of hard and mixed wood habitat within the Project Area.	Suspected could occur in Project Area due to minor amount of regeneration habitat in larger HMUs 416 & 417.
American Black Duck *Anas rubripes*	NA	None.	Wetlands and water.	Forested wet areas within the Project Area are too small.	Suspect could occur in Eastman, Mack, & Talford, Brooks in Project Area.
Ruffed Grouse *Bonasa umbellus*	3.1	None.	All age classes of aspen type and regeneration and young age classes of paper birch type.	Young & overmature age present. Lack of regeneration age habitat in aspen & paper birch types.	Documented occurrence in overmature habitat during ID-Team reviews of the Project Area.
Common Loon *Gavia immer*	All MAs.	State-listed Threatened.	Large bodies of water greater than 10 acres supporting fish.	Eastman, Talford, and Mack Brooks in Project Area are not large enough to support loon.	None documented during stream surveys or expected to occur in Project Area due to non-suitable habitat.

WMNF MANAGEMENT INDICATOR SPECIES	MAs	TEPS STATUS	HABITAT or MA ASSOCIATIONS: (Age Class / Community Type or Special Habitat Feature)	IS SUITABLE HABITAT PRESENT WITHIN THE PROJECT AREA ?	SPECIES DOCUMENTED AND / OR SUSPECTED TO OCCUR WITHIN THE PROJECT AREA?
HAWKS / FALCONS					
Northern Goshawk *Accipiter gentilis*	2.1 9.2	None.	Mature and over mature northern hardwood and northern hardwood/spruce and swamp hardwoods.	Mature northern hardwood forest is present in Project Area, but not MA 9.2.	None documented during field reviews. Suspect could occur based on suitable mature & over mature habitat present.
Broad-winged Hawk *Buteo platyperus*	2.1 9.1	None.	Mature and over mature paper birch / aspen.	Minor amount of overmature paper birch and aspen type present.	None documented during field reviews. Suspect could occur due to minor amounts of overmature suitable habitat.
Peregrine Falcon *Falco peregrinus anatum*	NA	None.	Cliffs and talus community.	No cliff ledges for nesting or open areas for foraging.	None documented, flyover suspected could occur from Osceola nest site and Russell Mtn. Crag activity.
Osprey *Pandion haliaetus*	All MAs.	State-listed Threatened.	Large water bodies with fish.	Eastman, Talford, and Mack Brooks are not large enough.	None documented or suspected due to non-suitable habitat in Project Area.
MAMMALS					
White–tailed Deer *Odocoileus virginianus*	3.1	None.	All ages hemlock community. Softwood for cover in deep-snow & regen age class hardwood for browse.	No hemlock stands, few scattered hemlock exist & lack of regen age class hardwood in the Project Area.	Documented present during site-specific field reviews: Tracks, scat, and bark scarring seen.
Snowshoe Hare *Lepus americanus*	3.1	None.	Regenerating and young age classes of spruce, spruce/fir, fir.	Lack of regenerating and young age classes of spruce/fir type.	Documented present in mature spruce / fir during site-specific field reviews.
Gray Squirrel *Sciurus carolinensis*	7.1	None.	Mature & over mature oak or oak / pine community. Developed ski trails.	There is no oak or MA 7.1 (ski trails) within the Project Area.	None documented or suspected to occur due to no oak or MA 7.1.
American Marten *Martes americana*	2.1 and all MAs.	State-listed Threatened.	All ages mixed forest types.	Mixed forest present. There is moderate to high levels of human activity in portions of Project Area.	None documented, but suspect could occur during times of travel and foraging in portions of Project Area.
Canada Lynx *Lynx canadensis*	5.1 6.1-.2 9.1	Federally Threatened.	Dense softwoods. May occur in other habitat types. Trail density of les than ¾ mile per square mile.	Moderate to high levels of human activity renders likely non-suitable denning / rearing habitat.	Considered extirpated (USDI 1998, BO 2000). None documented during forest-wide surveys. See BE/BA for analysis of probability of occurrence.
FISH					
Brook Trout *Salvelinus fontinalis*	2.1 3.1	None.	Permanent lakes, ponds, and streams.	Suitable habitat in Eastman, Talford, and Mack Brooks.	Documented in Eastman, Mack, and Talford Brooks associated with PA.
Sunapee Trout *Salvelinus alpinus*	All MAs.	State-listed Endangered	Deep coldwater bodies with shallow gravel bars.	No deep coldwater bodies with shallow gravel bars.	None documented during surveys or suspected to occur in the Project Area.
PLANTS					
Robbins' Cinquefoil *Potentilla robbinsiana*	6.2-.3 9.1-.2-.3.	De-listed Federally Threatened.	Restricted to the alpine zone.	No alpine zone in the Project Area.	None documented during surveys or suspected to occur within the Project Area due to non-suitable habitat.

Suitable Habitat = Meets species' life history requirements such as food, cover / shelter, water, breeding, and young rearing. Range and suitable habitat definitions were taken largely from DeGraaf et al. 1992; DeGraaf and Yamasaki 2001. Also see EA Literature Cited and/or Reviewed for further consideration of MIS habitat needs. The determination of non-occurrence of MIS within the Project Area considers the potential for occasional incidental and infrequent presence of a species within the Project Area.

Appendix F2: Probability of Occurrence of State TESSC & Other Wildlife Of Concern For The Tripoli East Project Area, Towns of Livermore & Thornton, NH.

SPECIES / LISTING STATUS	HABITAT REQUIREMENTS AND RANGE WITHIN NH.	IS SUITABLE HABITAT PRESENT WITHIN THE PROJECT AREA ?	DOCUMENTED OR SUSPECTED WITHIN THE PROJECT AREA ?
FISH			
Sunapee Trout **E** *(Salvelinus alpinus)*	Deep cold lakes and ponds. Scattered range in NH.	No permanent lakes or ponds within the Project Area.	Extirpated. None documented during H&R survey or suspected to occur.
Shortnose Sturgeon **E** (*Acipenser brevirostrum*)	Costal estuaries southernmost NH.	No costal estuaries within the Project Area.	None documented during H&R survey or suspected to occur due to no habitat.
Species-of-Special-Concern: **Finescale dace** (*Phoxinus neogaeus*) & **American brook lamprey** (*Lampetra lamottei*). There is no probability of occurrence in the Project Area due to non-suitable habitat. **Atlantic salmon** (*Salmo salar*) is considered a Forest-watch species and fry are stocked in Eastman Brook. Portions of the project area are considered occupied by salmon.			
BIRDS			
Pied-billed Grebe **E** *(Podilymbus podiceps)*	Freshwater emergent marsh. Range statewide.	No emergent marsh habitat.	None documented or suspected to occur due to non-suitable habitat.
Upland Sandpiper **E** *(Bartramia longicauda)*	Large open grassy fields. Range statewide.	No large open grassy fields.	None documented or suspected to occur due to non-suitable habitat.
Golden Eagle **E** *(Aquila chrysaetos)*	Cliffs & water with fish & remote areas. Range includes White Mountains & north.	No cliffs or large waterbodies with fish & existing moderate to high levels of human activity present in portions of PA.	None documented or suspected occur due to non-suitable habitat.
Sedge Wren **E** *(Cistothorus platensis)*	Freshwater marshes. Range statewide.	No freshwater marshes.	None documented or suspected to occur due to non-suitable habitat.
Northern Harrier **E** *(Circus cyaneus)*	Large open fields or marsh. Range statewide.	No large grass fields or marsh present.	None documented or suspected to occur due to non-suitable habitat.
Bald Eagle **E** *(Haliaeetus leucocephalus)*	Large trees for nesting & bodies of water with fish. Range S & N in state.	No. There are no large bodies of water with fish in the proposed Project Area.	None documented or suspected to occur due to non-suitable habitat.
Peregrine Falcon **E** *(Falco peregrinus)* **R9SS**	Nests on cliffs near large body of water. Forages in open areas. Range statewide.	No rock cliff-nesting habitat & small open areas are marginally suitable for foraging.	Suspected flyover & foraging from Osceola and Russell Crag. Breeding territory at Osceola East Peak
Piping Plover **E** *(Charadrius melodus)*	Coastal beach. Range along coast.	No coastal beach.	None documented or suspected to occur due to non-suitable habitat.
Roseate Tern **E** *(Sterna dougallii)*	Coastal beach. Range along coast.	No coastal beach.	None documented or suspected to occur due to non-suitable habitat.
Common Tern **E** *(Sterna hirundo)*	Gravelly sandy beaches, grassy uplands. Range along marine coast.	No coastal beach.	None documented or suspected to occur due to non-suitable habitat.
Least Tern **E** *(Sterna antillarum)*	Coastal beach. Range along coast.	No coastal beach.	None documented or suspected to occur due to non-suitable habitat.
Purple Martin **E** *(Progne subis)*	Houses near ponds, lakes, openings.	No permanent lakes or ponds within the Project Area.	None documented or suspected to occur due to non-suitable habitat.
Common Loon **T** *(Gavia immer)*	Large lakes > 10ac with fish. Range statewide.	No large lakes with fish.	None documented or suspected to occur due to non-suitable habitat.
Cooper's Hawk **T** *(Accipiter cooperii)*	Mature forests. Range statewide.	Mature and over-mature forest present.	None documented during FS ID-Team & stand exam field reviews of Project Area, but suspected could occur.

SPECIES / LISTING STATUS	HABITAT REQUIREMENTS AND RANGE WITHIN NH.	IS SUITABLE HABITAT PRESENT WITHIN THE PROJECT AREA ?	DOCUMENTED OR SUSPECTED WITHIN THE PROJECT AREA ?
Osprey **T** *(Pandion haliateus)*	Large lakes / ponds w/fish. Range statewide.	No large lakes or ponds with fish for forage.	None documented or suspected to occur.
Common Nighthawk **T** *(Chordeiles minor)*	Barren flat areas, roof tops. Range statewide.	No Barren flat areas or gravel rooftops.	None documented or suspected to occur.
Artic Tern **T** *(Sterna paradisaea)*	Coastal beach. Range along coast.	No coastal beach.	None documented or suspected to occur.
Three-toed Woodpecker **T** *(Picoides tridactylus)*	Decayed spruce/fir > 12 in dbh with loose bark. Range northern NH.	Small amount of spruce/fir habitat.	None documented, but suspected could occur within spruce / fir habitat.
Grasshopper Sparrow **T** *(Ammodramus savannarum)*	Large open grasslands with patchy bare ground & perches. Range southern NH.	No grasslands.	None documented or suspected to occur.
MAMMALS			
Canada Lynx **E** *(Lynx canadensis)*	Remote forest with little human activity. Uses krummholz, swamps, hardwood regen, openings, ledges, & older age classes of hardwoods & softwoods. Snowshoe hare preybase.	Yes. The Canada Lynx Assessment Unit Maps #8 & 11 for the Tripoli East Project Area shows suitable habitat for lynx in portions of the proposed Project Area.	Likely extirpated in NH (USFWS Federal Register 1998 & BO 2000). No tracks detected 1992-1996 WMNF track surveys. No lynx hair found 1999 thru 2002 lynx surveys on the WMNF.
Eastern Small-footed Myotis **E** *(Myotis leibii)* **R9SS**	Uses caves & old buildings for roosts & spruce & hemlock softwood. Uses regen for feeding. Range NH except far north.	Yes, suitable summer roost trees. No caves for winter habitat and no old buildings for roosting.	No documented occurrences within the proposed Tripoli East Project Area, suspected could occur.
American Marten **T** *(Martes americana)*	Mature soft / mixed woods. Range in White Mountains & north.	Mature softwood and mixed woods present.	None documented, but suspected could occur.
INVERTEBRATES			
Dwarf Wedge Mussel **E** *(Alasmidonta heterodon)*	Creeks and river with slow to moderate current. Known populations limited to the Ashuelot and Connecticut Rivers.	No, streams not large enough.	None documented or suspected to occur.
Brook Floater **E** *(Alasmidonta varicosa)*	Perennial rivers and streams. Known populations are found in southern NH.	No, streams not large enough	None documented or suspected to occur.
Frosted Elfin Butterfly **E** *(Incisalia irus)*	South of White Mountains in the Concord Pine Barrens.	No pine barrens.	None documented or suspected to occur.
Karner Blue Butterfly **E** *(Lycaeides melissa samuelis)*	Pine barrens. Occurs well south of White Mountains.	No pine barrens.	None documented or suspected to occur.
Persius Dusky Wing Skipper **E** *(Erynnis persius persius)*	Northern New England west to Wisconsin, south in the Appalachians to Virginia.	No acidic fen bog.	None documented or suspected to occur.
Ringed Bog Haunter Dragonfly **E** *(Williamsonia lintneri)*	Suitable coastal peat bog, kettlehole wetland and fen habitat.	No coastal peat bog or acidic fen habitat.	None documented or suspected to occur.
Pine Pinion Moth **T** *(Lithophane lepida lepida)*	Pine barrens. Southernmost NH.	No pine barrens.	None documented or suspected to occur.
Pine Barrens Zanclognatha Moth **T** *(Zanclognatha martha)*	Pine barrens. Southernmost NH.	No pine barrens.	None documented or suspected to occur.
Cobblestone Tiger Beetle **T** *(Cicindela marginipennis)*	Cobble islands in Connecticut River.	No cobble islands.	None documented or suspected to occur.

SPECIES / LISTING STATUS	HABITAT REQUIREMENTS AND RANGE WITHIN NH.	IS SUITABLE HABITAT PRESENT WITHIN THE PROJECT AREA ?	DOCUMENTED OR SUSPECTED WITHIN THE PROJECT AREA ?
AMPHIBIANS			
Marbled Salamander **E** *(Ambystoma opacum)*	Vernal pools or fishless swamps in upland woods of floodplain forests with oxbows and cut off stream channels. Range s. NH.	No floodplain forest or distinct vernal pools meeting NH documentation guidelines.	None documented or suspected to occur. Only 2 specimens documented in southern most NH (Taylor et al. 1996).
Species-of-Special-Concern (SSC) **Jefferson salamander** (*Ambystoma jeffersonianum*) has very low potential to occur in the riparian habitat of the Tripoli East Project Area.			
REPTILES			
Timber Rattlesnake **E** *(Crotalus horridus)*	Requires dry, rocky outcroppings on forested hillsides with high rodent populations. Range southern NH.	Yes. However, rocky outcrops are avoided.	No. Extirpated from the WMNF.
Eastern Hognose Snake **T** *(Heterodon platyhinos)*	Sandy soils, open woodlands. Range southern NH along Merrimack River.	No sandy soils.	None documented or suspected to occur.
Wood Turtle **R9SS** *(Clemmys insculpta)* is a Federal-listed R9 Sensitive species and potential occurrence and effects are addressed in the Tripoli East BE/BA.			

Species and listing status are taken from the NH Fish and Game T&E list and NHNHI lists.

Suitable Habitat = Meets species' life history requirements such as food, cover / shelter, water, breeding, and young rearing. Species' range and suitable habitat definitions were taken largely from DeGraaf et al. 1992; DeGraaf and Yamasaki 2001. Also see EA Literature Cited and/or Reviewed Section for further sources of information considered for determining suitable habitat needs. The determination of non-occurrence of a species within the Project Area considers the potential for occasional incidental and infrequent presence of a species within the Project Area.

APPENDIX F3: ANALYSIS OF POTENTIAL EFFECTS OF THE PROPOSED TRIPOLI EAST VEGETATION MANAGEMNT PROJECT ON STATE-LISTED TESSC AND OTHER WILDLIFE OF CONCERN ON THE WMNF

INTRODUCTION: This analysis documents the potential effects of the proposed Tripoli East Vegetation Management Project on State-listed Threatened, Endangered, and Species of Special Concern (TESSC). Biologist Weloth prepared this analysis in accordance with direction and format provided in Forest Service Manual (FSM) 2672.42 for BEs.

ANALYSIS AREA (Herein after referred to as the Project Area): See the Vegetation Resource Section (HMUs 416 and 417 Analysis) and the Wildlife Resources Section of the Tripoli East EA 2.0 for a complete description of the Project Area in terms of the existing condition of vegetation as wildlife habitat.

PURPOSE AND NEED: See the Purpose and Need Section of the Tripoli East EA 2.0.

PROPOSED ACTION AND ALTERNATIVES: See the Alternatives Section of the Tripoli East EA 2.0.

I. PRE-FIELD REVIEW OF EXISTING INFORMATION: In Sept. 1998, the FS scoped the US Fish and Wildlife Service (USFWS), the NH Fish and Game Department (NHFG) and the NH Audubon Society, and the NH Natural Heritage Inventory (NHNHI) regarding the potential status of occurrence and any concerns for TESSC plant and wildlife species within the proposed Tripoli East Project Area. NHNHI responded in writing to FS public scoping indicating no known verified documented occurrences of TESSC plants or animals within the Project Area. Although they have State-listed status, the small whorled pogonia (*Isotria medeoloides*), Canada lynx (*Lynx canadensis*), Eastern small-footed myotis (*Myotis leibii*), bald eagle (*Haliaeetus leucocephalus*), and peregrine falcon *(Falco peregrinus anatum)* are Federally-listed T&E or R9SS and were addressed in the BE/BA for the proposed Tripoli East Vegetation Management project, as amended and Supplemental Information Reports (see the project file) and determinations disclosed in the EA text. During the Forest Plan Revision Process, several species were identified as having a potential viability concern on the WMNF. These species are shown in Appendix G2 of the Tripoli East EA 2.0.

Literature, Database, Species List Reviews, & Personal Communications: Range and habitat information for vertebrate species was taken from DeGraaf and Rudis (1986), DeGraaf (et al. 1992) and Foss (1994). Topographic, soil, GIS maps, aerial photos and reviews of literature and recovery plans and internal and external database checks and personal communications with professional biologists and botanists were used to determine species range and habitat requirements (see Literature Cited and/or Reviewed Section).

II. FIELD RECONNAISSANCE:

Forest Service (FS) Interdisciplinary-Team (IDT) Field Reviews: The FS ID-Team conducted site-specific field reviews of the proposed Project Area at various times of the year including periods of flowering, leaf off and wintertime. These field reviews documented no direct sighting of TESSC or other species of concern plants or animals (except for butternut, ginseng, and squirrel corn) or indirect signs such as tracks, scat, raptor nests or mammal dens within portions of the hardwood, softwood, and riparian habitat of the Project Area.

1998 NHNHI TEPS Plant Surveys and USFWS GIS Maps: NHNHI database check revealed no known occurrences (scoping letter response) and site-specific botanical surveys for TESSC plant and animal occurrences found no occurrences (except for butternut and ginseng during IDT review) within the Project Area (Sperduto 1998).

Winter Track and Small Mammal Trap Monitoring Surveys & Audubon Neotropical Migratory, Wetland & High Elevation Bird Monitoring Surveys: During 1993-1997, FS personnel conducted wildlife winter track surveys in similar hardwood and softwood community types on the Lost and Walker (managed land) and North Fork and East Branch (unmanaged adjacent to managed land) transect lines located in nearby sub-watersheds. FS personnel also conducted directed searches for rare and MIS small mammal and amphibian species on these same wildlife transect monitoring lines. Winter track and trap monitoring surveys documented no occurrence of TECCS (except for American marten along the North Fork/East Branch transect). Audubon personnel also conduct ongoing Forest-wide monitoring of TES / MIS hawks and falcons, eagles, and MIS neotropical migratory songbirds across habitat that is managed, unmanaged, adjacent to managed, wetland, and high elevation habitats.

1991 & 94 FS Stream & Riparian Surveys, 2000 Fish Passage and Population Surveys: FS Biological Technicians conducted H&R (1988) basin-wide stream/riparian surveys of Eastman, Talford, and Mack Brooks located within, adjacent to, and downstream of the Project Area respectively. Technicians documented no occurrence of TESSC or other species of concern plants or animals during these aquatic ecosystem surveys (unpublished data). In 2000, FS Technicians conducted fish passage and population surveys in the Eastman Brook sub-watershed (USDA-FS 2000). Technicians found no State-listed TESSC or other species of concern during the culvert or fish population surveys.

PROBABILITY ANALYSIS OF WILDLIFE SPECIES and/or HABITAT OCCURRENCE: Through scoping and ongoing discussions, the FS contacted NHNHI and requested a list of wildlife species known to occur within the WMNF. Biologist Weloth reviewed and analyzed the NH State list of TESSC wildlife species whose range is known to include the WMNF. Weloth analyzed the probability of occurrence of 12 State-listed TESSC vertebrate species, which were not addressed in the Tripoli East BE/BA for the proposed Project Area. Weloth also analyzed the probability of occurrence other species with viability concern (Appendix G2). Weloth based probability of occurrence on literature and database reviews and personal communications with professional biologists and botanists regarding current or historic documented occurrence, species' distribution, population status, extirpation, and suitable habitat needs. Weloth used local knowledge of the Project Area already in hand regarding habitat suitability and site-specific and local surveys. No verified documented sightings of State-listed TESSC species were found during internal and external database or field searches. The Project Area contains northern hardwood, paper birch, spruce/fir, and mixed hardwood/softwood forest types. There are large, mature trees with cavities, and riparian areas within the Project Area. These habitats could provide potential suitable habitat for some TESSC plant and wildlife species. If suitable TESSC habitat was present within the proposed Project Area for species **documented or suspected** as occurring on the WMNF, subsequent analysis of potential effects was based on the assumption that the **suitable habitat present could be occupied by these State-listed species**.

Although reviewers documented no Cooper's hawk or nests during FS and NHNHI field reviews, the mature northern hardwoods and the riparian areas within the Project Area provides marginally suitable habitat for Cooper's hawk. There is potential habitat for the American pine marten and the three-toed woodpecker in the softwood stands. There is suitable aquatic and terrestrial habitat for the Jefferson salamander. Determinations of **potential** effects to the species mentioned above were based on the **assumption that potential habitat could be occupied**. The following analysis documents the potential effects of the alternatives on (2) State-listed threatened and (1) species of special concern (TESSC) having a **very low** probability of occurrence within the Project Area (**TABLE 1**). The Tripoli East BE/BA addressed all of the State-listed endangered species (Project File) and the Tripoli East EA 2.0 Appendix G2 addressed other species with potential viability concern on the WMNF.

TABLE 1: State-listed TESSC Wildlife with very low potential for occurrence within the Tripoli East Project Area (assuming potential suitable habitat could be occupied).

STATE STATUS	TESSC SPECIES		POTENTIAL FOR OCCURRENCE
Threatened	Cooper's hawk	(*Accipiter cooperii*)	very low - summer transient
Threatened	American pine marten	(*Martes americana*)	very low potential
Threatened	Three-toed woodpecker	(*Picoides tridactylus*)	very low potential
Species Of Special Concern	Jefferson salamander	(*Ambystoma jeffersonianum*)	very low potential

III. ANALYSIS OF POTENTIAL EFFECTS OF THE NO ACTION AND PROPOSED ACTION ALTERNATIVES ON: Cooper's hawk *(Accipiter cooperii)*

The Cooper's hawk is State-listed as threatened in New Hampshire. Although a few Cooper's Hawk winter in New Hampshire, most arrive in March or April, and migrants are still passing through in early May (DeGraaf and Rudis 1986). They prefer to nest in a closed canopy condition often near an opening (Foss 1994). In general nests have been detected in hemlock, spruce, yellow birch, and white pine trees. Cooper's hawk return to the same nest site year after year. Breeding occurs in deciduous or mixed woodlands that are dense or open. This hawk occupies similar forest habitat as the sharp shinned hawk but has broadened its habitat by moving into open agricultural areas and flood plain forests and wooded swamps (DeGraaf and Rudis 1986). Major food items include small to medium birds and small mammals. Only 2 successful nests were confirmed in the State during the breeding bird atlas survey (1980-1987) with evidence of 4 other territories. This species declined in the 1950's and has not recovered (Foss 1994).

Occupied and Unoccupied Habitat: Raptors or their nests, such as the State-listed threatened Cooper's hawk *(Accipiter cooperii)* were not seen during FS stream/riparian surveys & ID-Team and NHNHI field reviews conducted at various times of the year including leaf-off (FS 1993-94, 1998-2002). The Atlas of Breeding Birds in NH documents no record of breeding/nesting Cooper's hawk in the Towns of Livermore and Thornton (Foss 1994). Numbers of verified breeding pairs in the WMNF are relatively low (Foss 1994). Although there are no documented sightings of Cooper's hawk in the Project Area, the mature forest habitat and portions of the riparian areas within the Project Area provide potential suitable nesting or foraging habitat for Cooper's hawk. This species forages in forested and open habitats, due to the minor amount of 2 acres of open habitat and relatively moderate-levels of human activity, the Project Area is marginally suitable habitat.

Direct and Indirect Effects: The No Action alternative would cause no direct effect of tree removal at this time from Forest Service actions in the Project Area. There is a lack of early successional habitat used by songbird and small mammals, which would decline overtime and would indirectly limit the diversity of prey species available to Cooper's hawk within the Project Area. An opportunity to increase the amount of opening community type as potential forage habitat for hawk species would be lost at this time.

Implementation of the Proposed Action or action alternatives would cause the direct effect of removal of mature trees from the proposed Project Area, which could temporarily displace Cooper's hawk (if present) into the adjacent forest. Cooper's hawk is not a permanent WMNF resident and would not be directly affected during winter implementation activities. However, summer harvest operations could directly affect Cooper's hawk by displacing breeding and non-breeding individuals from an area during active harvest operations or by unintentionally cutting an active nest tree. It is likely displaced hawks would return to an area upon completion of harvesting if suitable habitat is available (a breeding goshawk pair returned to the nest adjacent to group treatments after harvesting Moody Ledge TS, personal observation biologist Weloth). The risk of cutting an active nest tree is low as breeding hawks usually vocalize around their nest and avoidance measures ensure that all identified active raptor nests are protected. Cooper's hawk breeding season is March or April and ends in August (Foss 1994). Wildlife Standards and Guidelines (USDA-LRMP 1986a, III-18, VII-B-20) ensure no timber harvest activity would occur during March 15 to May 20 to avoid conflict with active raptor nests. Trees containing raptor nests would not be removed and a 66 foot uncut buffer of trees would remain around any active nest site if found, with retention of 65-85% canopy closure within the outer 165 foot radius of the nest site (DRED 1997).

The indirect effect of tree removal would be a decrease in the amount trees suitable as potential future nest trees within the proposed Project Area. The clearcut treatments of the action alternatives could reduce more potential nesting habitat compared to the No Action and Alternative 3. All of the action alternatives would cause minor direct or indirect effects to Cooper's hawk or their habitat as there is more than the desired amount of mature and over-mature habitat in the managed portion of the HMUs 416 and 417 and the Project Area. Additionally, suitable nesting habitat occurs in the unmanaged MA 6.1 portion and the 10% deferred portion for old growth development within HMUs 4.16 and 417. However, it is unlikely Cooper's hawk occupy the Project Area due to lack of suitable open habitat for foraging.

Cumulative Effects: Past, present, and future activities that remove large diameter mature and over-mature trees would reduce the number of trees available as potentially suitable nest trees and/or temporarily displace Cooper's hawk from the Project Area, if present. However, the nearby and recent Eastman West Sale and foreseeable future management actions have and would use similar Forest-wide S&Gs designed to maintain a combination of early successional and mature and over-mature habitats and large wildlife trees in managed units within the adjacent WMNF (USDA-LRMP 1986a, III, 12-13, 15, 18 and VII-B-20), which should maintain suitable nesting and foraging habitat off-site for individual Cooper's hawk, thereby reducing cumulative effects to this species and maintaining population viability. Implementation of the Proposed Action or action alternatives would contribute no cumulative effects of past, present, and future actions that could affect the Cooper's hawk or their habitat.

IV. EFFECTS DETERMINATION AND RATIONALE:

Based on site-specific field surveys, internal and external database and scientific literature reviews, and information from professional biologists, implementation of the No Action or any one of the action alternatives **may impact individuals or habitat, but would not likely cause a loss of viability to the population or species** of Cooper's hawk *(Accipiter cooperii)*.

RATIONALE: Qualified personnel documented no fly-over sightings or vocalizations of Cooper's hawk and no nests within the Project Area during several site-specific field surveys. Forest-wide Standards and Guidelines would help protect the wetland and riparian habitat and any active raptor nests if present during project implementation.

III. ANALYSIS OF POTENTIAL EFFECTS OF THE PROPOSED ACTION & ALTERNATIVES ON: American marten (*Martes americana*)

This species is State-listed as threatened. The marten is considered an arboreal (tree dwelling) species. Marten occur in northern portions of New England and use a variety of habitat including dense mixed hardwood-conifer forests and coniferous spruce/fir forests and cedar swamps. Marten are considered sensitive to human presence/activity, especially during breeding season and young rearing, and prefers remote areas from civilization. They use softwood dominated mixed stands preferred in undisturbed forests (DeGraaf and Rudis 1986). Marten require habitats that have both high vertical and horizontal woody structure such as snags and windthrow. Dead and downed woody debris is an important habitat component that provides den sites and access to subnivean areas during the winter. Marten forage and move on ground and often use riparian areas for food sources (small mammals, birds, berries), for travel corridors, and as thermal refuges from the summer heat.

Occupied and Unoccupied Habitat: The existing road density (Tripoli Road) and the existing moderate-level of human activity associated with the Tripoli East Project Area coupled with marginal amounts of spruce/fir and no cedar swamps within the Project Area, affords marginal amounts of suitable marten habitat. If present, this species would likely occur in the softwood or mixed wood component and use riparian areas as travel corridors. However, no marten or their sign/activity was noted during the H&R stream/riparian survey or other FS reviews of the proposed Project Area. Winter track surveys conducted during 1992-97 on wildlife monitoring transects located in the adjacent North Fork/East Branch Pemigewasset watershed (having similar habitat types as the Project Area) detected few marten.

Direct and Indirect Effects: The No Action Alternative would cause no direct effect of tree removal and noise and human presence associated with vegetation management at this time. Indirect effects overtime would be continued recruitment of woody material as the forest continued to mature. Also, due to lack of early successional and open habitat, over time the diversity of small mammals that use these habitat types would decline and would not be available as prey base for the American marten.

The action alternatives would cause a direct effect of tree removal and noise and human presence associated with vegetation management. Active harvest operations could cause potential displacement of individual marten if present, especially in summer units. Displaced marten would likely return to these stands upon harvest completion. Only marked trees would be removed and there would be no effect from removal of existing large dead and downed wood material on the ground under all action alternatives. Recent research (Potvin et al. 2000) reinforces the conclusion of two previous studies, indicating landscapes with >30% open areas are not suitable for marten. Three geographically separate studies in Utah, Maine, and Quebec have arrived at the same rough estimate of the upper limit of fragmentation for marten source habitat. Analysis of the larger HMUs 416 and 417 landscape shows <1% opening community type and the smaller Project Area would not create >30% open area.

Indirect effects of the action alternatives would cause an increase in the amount of regeneration age class. Over time, the action alternatives would increase the softwood and mixed wood components in the Project Area. The clearcut prescriptions of Alternatives 2, 4, 5 and 6 would create larger openings and cause a reduction in recruitment of larger woody material (>11 dbh) on the ground between 10 and 60 years within the harvested units. The magnitude of this effect would be relatively minor as adequate recruitment of large woody material would occur within the single tree units, in between harvest units, and in the surrounding mature and over-mature habitat in unmanaged MA 6.1 and in the 10% portion of HMUs 416 and 417 deferred for the development of old growth characteristics.

Cumulative Effects: Past, present, and future vegetation management activities could temporarily displace marten from softwood and mixed wood habitat. Clearcut treatments would result in the reduction of large woody material (>11 dbh) recruitment between 10 to 60 years. Forest Plan S&Gs that maintain a mix of mature and over-mature softwood habitat across the Forest, reserve wildlife trees, and retain dead and down wood (LRMP 1986a, III, 12-13,19) should maintain suitable habitat for American marten.

IV. EFFECTS DETERMINATION AND RATIONALE:

Based on site-specific field surveys, internal and external database and scientific literature reviews, and information from professional biologists, implementation of the No Action or action alternatives **may impact individuals or habitat, but would not likely cause a loss of viability to the population or species of** American marten *(Martes americana)*.

RATIONALE: Qualified personnel documented no American marten within the proposed Project Area during several site-specific field reviews (FS ID-Team reviews and NHNHI survey). Forest wide Standards and Guidelines would help protect riparian areas as potential travel corridors (LRMP 1986a III-18 and VII-B-20).

III. ANALYSIS OF POTENTIAL EFFECTS OF THE PROPOSED ACTION & ALTERNATIVES ON: Three-toed Woodpecker *(Picoides tridactylus)*

This woodpecker inhabits coniferous forests above 3,000 feet, especially burned areas with large stands of dead trees and favors burned or logged areas and bogs where dead trees occur. Special habitat requirements include dead limbs for nesting. Diet consists of 70% wood-boring larvae of moths and beetles and they follow bark beetle outbreaks. This woodpecker is sedentary species, and rarely leave a home range or deep woods (DeGraaf et al. 1992).

Occupied and Unoccupied Habitat: This woodpecker is a rare resident in northern New England. There are historic documented occurrences on the White Mountain National Forest (Foss 1994). An unconfirmed sighting was reported within the Five Corners Timber Sale Area across the road near the Ammonoosuc Ranger Station. There are few acres of suitable conifer habitat in the Tripoli East Project Area for this woodpecker and no burned forest or insect outbreak. No three-toed woodpeckers were detected during multi-year surveys on the nearby wildlife monitoring transects (USDA-FS monitoring data 1992-1999).

Direct and Indirect Effects: The No Action Alternative would cause no direct effect of tree removal and noise and human presence associated with vegetation management at this time.

Under the action alternatives, there would be a possible direct effect of removal of suitable softwood habitat. An indirect effect overtime would be a reduction in potential snag trees for nesting and foraging habitat.

Cumulative Effects: Because the amount of softwood acres treated is relatively low and this woodpecker used logged areas for foraging, the Proposed Action and action alternatives would not add adverse cumulative effects.

IV. EFFECTS DETERMINATION AND RATIONALE:

Based on site-specific field surveys, internal and external database and scientific literature reviews, and information from professional biologists, implementation of the No Action or any one of the action alternatives **may impact individuals or habitat, but would not likely cause a loss of viability to the population or species** of three-toed woodpecker *(Picoides tridactylus)*.

RATIONALE: Qualified personnel documented no three-toed woodpecker within or adjacent to the proposed Project Area during several site-specific field reviews (FS-ID Team Reviews and NHNHI survey). Forest wide Standards and Guidelines would help protect riparian areas as potential habitat (LRMP1986a III-18 and VII-B-20).

III. ANALYSIS OF POTENTIAL EFFECTS OF THE PROPOSED ACTION & ALTERNATIVES ON: Jefferson salamander (*Ambystoma jeffersonianum*)

The Jefferson salamander is a terrestrial amphibian found in undisturbed damp, shady deciduous or mixed woods, bottomlands, swamps, ravines, moist pastures or lakeshores. They often hide beneath leaf litter, under stones or in decomposing logs and stumps. During the winter months the salamander hibernates on land usually near breeding waters. They have been found hibernating in rotten logs (DeGraaf and Rudis 1986). Special habitat requirements include temporary ponds for breeding period. From February to April they migrate to ponds and vernal pools for spawning. Egg deposition occurs between February and April often beneath ice. Food preference includes small invertebrates including worms, millipedes, spiders, insects and aquatic crustaceans and feeds on most animal life that it can capture (DeGraaf and Rudis 1986).

Occupied and Unoccupied Habitat: The distribution of the Jefferson Salamander extends from western New England to west central Indiana and north to New Jersey. The relative abundance is locally common to rare. The Jefferson salamander may occur throughout the Connecticut River Valley in southwestern New Hampshire. The only one verified record in New Hampshire is in Winchester, Chesire County, in May 1984. There are no documented occurrences on the WMNF or the Project Area.

Forest Service Biological Technicians conducted stream/riparian inventories of Eastman, Talford, and Mack Brooks. Technicians used a basin wide approach (Hankin & Reeves 1988) to evaluate the existing condition of the aquatic habitat and the adjacent riparian area (USDA-FS 1993-94) and conducted culvert and electrofishing surveys in the Eastman Brook sub-watershed (USDA-FS, 2000). Technicians used NH Fish and Game's Reptile and Amphibian Reporting Program (RAARP) protocol to document sightings of amphibians and reptiles to help establish information on their distribution and occurrence in New Hampshire. Technicians documented no sightings of the Jefferson salamander during the stream survey or the adjacent riparian areas. The Project Area may contain suitable aquatic and terrestrial habitat for this salamander, especially the riparian areas associated with the Project Area.

RAARP's spring report of May 1994 and May 1997 included compilation of the 1993 and 1996 field season reports. These records listed amphibian and reptile species by town from RAARP records received through the fall of each year. RAARP records showed no Jefferson salamander sightings for the towns of Lincoln, Livermore, or Thornton. Furthermore, Jefferson salamander was not seen during all field reviews of the proposed Project Area.

Direct and Indirect Effects: The No Action alternative would cause no direct, indirect, or cumulative effects on Jefferson salamander or habitat from FS actions at this time.

Implementation of the Proposed Action or action alternatives would cause a direct effect of tree removal from the Project Area. An indirect effect of tree removal would result in a decrease in woody material recruitment in the harvest units within the proposed Project Area. However, Forest-wide Soil and Riparian Standards and Guidelines provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species such as reptiles and amphibians (USDA-LRMP 1986a, III 14-15). Ground material is especially important to Jefferson salamanders, as they have been documented hibernating in the rotten logs elsewhere (DeGraaf and Rudis 1986).

Another direct effect would be ground disturbance associated with skidding, landing and improvements to the existing roads within the Project Area. Any ground disturbance resulting in a trenching effect may serve as a physical barrier to dispersing salamanders (Gibbs 1998). Any conversion of land to a year round paved road may present itself as a dry open inhospitable obstacle for Jefferson salamander because it is a slow moving, small bodied amphibian and is physiologically constrained to remain near moist refugia and it is well documented that cleared strips of land serve as barriers to dispersing Jefferson salamanders (Gibbs 1998). There would be no paving of roads.

Gibbs (1998) found that simple linear landscape structures such as roads and ditches may represent physical barriers for amphibian migration routes. Implementation of the Proposed Action would not cause the direct effect of impediment of travel or migration of the Jefferson salamander during the spring and fall migrations within portions of the proposed Project Area due to no permanent physical barriers or use of man-made materials to pave roads. An indirect effect of these potential obstacles may impede the salamanders from traveling to breeding and foraging areas. However, the relatively small-scale size of the proposed Project Area in relation to the known range of the amphibian, the potential effects would be minor in magnitude and not cause a loss of overall population viability of Jefferson salamander or other amphibian and reptile species.
Forest Management Practices (DRED 1997) and winter harvesting mitigation measures designed to avoid impacts and to maintain the integrity of wet and riparian areas where amphibians likely occur are planned for all action alternatives. Riparian and Fish Habitat standards and Guidelines (USDA-LRMP 1986a, III 15-16) call for maintaining 50% of the basal area along perennial streams such as Eastman, Talford and Mack Brooks. Potential travel routes most likely occur in the riparian and wet areas, which are excluded from proposed harvest. Sale administration and winter logging would limit skid trail rutting and fall time migration barriers to amphibians and reptiles. The action alternatives would not cause adverse direct or indirect effects that contribute to the loss of population viability or biodiversity of State-listed TESSC amphibians.

Cumulative Effects: Past, present, and future removal of trees on the WMNF could reduce the amount of woody debris recruitment available as potential habitat for salamanders. Because relatively minor to no direct or indirect effects are predicted, implementation of the No Action or any one of the action alternatives would have little to no likelihood of contributing to the cumulative effects of past, present and future management activities that could affect Jefferson salamander or its habitat.

IV. EFFECTS DETERMINATION AND RATIONALE:

Based on site-specific surveys, internal and external database reviews, and information form professional biologists, implementation of any of the action alternatives **may impact individuals or habitat, but would not cause a loss of viability to the population or species** of Jefferson salamander *(Ambystoma jeffersonianum).*

RATIONALE: Qualified personnel documented no sightings of Jefferson salamander during the Eastman, Talford, and Mack Brook H&R stream surveys or culvert and electrofishing surveys (USDA-FS 1993-94, 2000). RAARP records show no occurrence within or adjacent the proposed Project Area. The action alternatives would adhere to Standards and Guidelines that provide for the retention of ground material necessary to support viable populations of reptiles and amphibians (USDA-LRMP 1986a, III 14-15).

EFFECTS DETERMINATIONS FOR OTHER SPECIES WITH POTENTIAL VIAVITILTY CONCERN ON THE WMNF (see appendix G2):

The potential direct, indirect, and cumulative effects described in this analysis for other State-listed TESSC such as tree removal, displacement, etc. would also apply to the species having a potential viability concern on the WMNF (see EA Appendix G2) having probability of occurrence within the Tripoli East Project Area.

The No Action and all action alternatives of the proposed Tripoli East Vegetation Management Project would cause **no adverse effects** to the species or their suitable habitat shown in Appendix G2. The rationale is that the majority of the Project Area would be harvested during winter months when most species of concern shown in Appendix G2 are dormant and/or a relatively small amount of suitable habitat would be affected. Also action alternatives would either create and/or perpetuate suitable habitat for these species.

V. SUMMARY OF STANDARDS AND GUIDELINES AND AVOIDANCE MEASURES:

The following Standards and Guidelines and avoidance measures were considered for the Proposed Action and action alternative to ensure avoidance and protection of TESSC and other species of concern and/or their potential suitable habitat within the proposed Tripoli East Project Area:

TESSC Raptor Nesting Habitat: Retain all trees having an active or inactive TESSC raptor nest. Surround active raptor nests (if present) with a 66-foot (1 chain) uncut buffer and retain 65-85% canopy closure within a 165 feet radius (NHDFL and SPNHF 1997). No clearing for office facilities would occur within 330 feet (5 chains) of an active TESSC raptor nest during the breeding and nesting season March 15 through May 20 to avoid conflict with active raptor nests, if present (USDA-LRMP 1986a, III-18 & VII-B-20). Maintain wildlife cavity trees & the integrity of riparian areas via Forest-wide Wildlife and Fish Habitat & Riparian Standards & Guidelines (USDA-LRMP 1986a, III-15, 16, 19).

Wildlife Cavity / Nesting Habitat: Where possible, reserve trees with existing or potential for exfoliating bark or cavity features. Reserve at least one live tree with an 18" DBH having two defects and retain 1 to 2 live trees/acre (.25 to 2.50 sq ft/acre) having 18" DBH with 2 or more defects if present (LRMP III-15, VII-B-21). Maintain wildlife cavity trees and the integrity of riparian areas via Forest-wide Wildlife and Fish Habitat and Riparian Standards and Guidelines.

See the **Literature Cited and/or Review Section** of the Tripoli East EA 2.0 for a complete list of information sources used and cited in this analysis.

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