

#### 4.4 BIOLOGICAL RESOURCES

***The following comments are related to general concerns regarding vegetation impacts, wildlife impacts, and forest fragmentation as a result of Project construction.***

**Written Comment 1N:**

Forest fragmentation is a major concern. While effort has been made to use existing logging and oil/gas well roads and other existing fragmentations, there is still a great deal of forest that will be cleared (and thus further fragmented) as a result of this project. In fact, it appears that as many as one-third to one-half of the turbines will result in additional forest fragmentation. The impacts on wildlife habitat, forest health, etc. should be minimized by a project design that would result in as little forest clearing as feasible.

**Written Comment 1R:**

In Section 3.3.2.1.1 “Construction-Vegetation”, the DEC noted the following concerns. An invasive species management plan should be developed to describe measures the project sponsor will take to minimize the introduction, spread, and establishment of invasive species within the project area. A table similar to Table 8 should be included describing the amount of each habitat type within the project area that will be lost and altered on a temporary and permanent basis as a result of construction, operation, and maintenance of the project.

**Written Comment 1S:**

In Section 3.3.2.2.1 ‘Operation-Vegetation”, the DEC noted the following issues. Although the DEIS discusses some of the impacts to forested habitat, and the shrub/scrub or grassland areas that may result from forest clearing that could be utilized by species dependent on those habitat types, DEC considers the conversion of forest cover to another type of habitat as a loss of forest habitat. Even if the forest is “allowed to regenerate naturally”, it would not become mature forest for decades, and therefore the disturbed area would not be utilized by forest-dependent species during the life of the project, and should be considered a permanent loss of forested habitat. An estimate of total forest acreage permanently lost should include all areas of forest disturbed or cleared for construction of project components, and the area of forest converted to another habitat type.

**Written Comment 2D:**

Audubon New York commends the Town of Allegany for requiring an environmental impact statement be conducted as well as two years of avian and bat surveys. The Allegany Forest Tract’s relatively unfragmented forest landscape consists of forest in various stages of succession, but mostly consists of mature forests. The Allegany Forest Tract is one of the few remaining places in New York where it is still feasible to maintain and restore a functional forest

ecosystem that supports a full diversity of birds and wildlife. This is because it is a large tract of forest relatively lacking in permanent structures or non-forest land uses. Contrary to statements included in the DEIS about the disturbed nature of the project area and that it is relatively less important than nearby forests, Audubon New York believes that the project site is providing quality breeding habitat for several species of bird of conservation concern. Many disturbances like logging cause only temporary challenges for breeding birds that moderate over time as the forest regenerates. More-or-less permanent openings and roads associated with operation and maintenance of wind turbines, however, will have a lasting negative impact on this area. This project will result in permanent habitat loss and fragmentation. *We encourage the town to direct this project so that it reduces to amount of the habitat loss and degree of habitat fragmentation (e.g., use existing network of roads) and avoids sensitive areas such as wetlands and state significant habitats, like the high quality forest habitat found at this site.*

**Written Comment 50A**

According to the DEIS, the proposed project includes “approximately 9,120 acres” which is “a forested ridge dissected by steep hollows” and is “characterized by mixed deciduous forest.” The construction of an array of wind turbines, along with access roads “up to 34 feet in width,” will be ruinous to our hills. Thousands of trees will be clear cut and large rocks will be blasted away to level the ridge tops. Massive erosion and sediment runoff will fill our streams and creeks. This will be devastating to the beauty of our area and change our pristine ridges into constantly spinning industrial machines.

**Written Comment 50B:**

A simple science lesson, as we teach our children in the classroom, about the importance of trees filtering the carbon dioxide out of the air, cleansing it, and replenishing our air with oxygen, tells us that destroying so many trees is detrimental to our environment. One acre of trees alone removes 2.6 tons of carbon dioxide each year! Will the 29 turbines be more effective? And what example are we setting for our children who know how important trees are to our existence?

**Written Comment 51A:**

I've been a resident of Nichols Run in Limestone for 35 years and the scenic beauty and solitude of this area is of paramount importance to me. I've been a bird watcher/naturalist for over 40 years and have spent time on the Chipmonk Road doing bird censuses for the Buffalo Ornithological Society and also for the Atlas of Breeding Birds of New York State. I know people were concerned about endangered species in the area. This is one area that is prime wood warbler habitat. Many of these birds require large tracts of forest land to survive and the southern part of Cattaraugus County provides that in abundance.

**Response to Written Comments 1N, 1R, 1S, 2D, 50A, 50B, and 51A:**

Please see Appendix C of this FEIS for a copy of the Invasive Species Control Plan.

With respect to forest/vegetative impacts, as described in Section 3.3.3.1 of the DEIS, Project access roads will be sited on existing roads to the extent practicable, and areas of disturbance will be confined to the smallest area possible. As indicated in Table 4.1-1 provided below, Project construction will result in permanent conversion of 27 acres of vegetated land to unvegetated/built facilities within the Project Site. Most of the impacts relating to vegetative communities occur in forested areas. Of the 229.5 acres of forest land impacts, 25 acres will be permanently converted to built facilities (wind turbines, access roads, met tower, collection station, and substation) and 204.5 acres will be allowed to regenerate naturally following construction or will be maintained as a shrubland/successional community for the life of the Project. The latter type of conversion will occur within a 200-foot radius of all turbine sites located in forest. It should be noted that for vegetation, in addition to permanent conversion to built facilities, impacts can be expressed in terms of conversion of one vegetative community to another (e.g., forest to successional shrubland or old field).

It should also be noted that much of the forestland is already fragmented due to the existing oil/gas development and logging activity, which has resulted in the clearing of overstory trees, and the development of forest roads and clearings throughout the site. In addition, many of the turbines are immediately adjacent to existing clearings, and therefore much of the turbine-related clearing will result in an extension of existing clearing. Consequently, the impacts associated with this Project are expected to be consistent with the impacts associated with current (and historic) land uses on-site.

**Table 4.4-1: Impacts to Vegetative Communities**

<b>Community</b>	<b>Total Disturbance (Acres)</b>	<b>Temporary Disturbance (Acres)</b>	<b>Conversion to Other Successional Community (Acres)</b>	<b>Permanent Loss (Acres)</b>
Active Agriculture	2.0	2.0	0	0
Disturbed-Developed <sup>1</sup>	9.9	9.9	0	0
Mixed Deciduous-Pine Forest	102.7	0	91.0	11.7
Northern Deciduous Forest	124.3	0	111.0	13.3
Old Field	8.3	6.3	0	2.0
Pine	1.4	0	1.4	0
Plantation	1.1	0	1.1	0

Community	Total Disturbance (Acres)	Temporary Disturbance (Acres)	Conversion to Other Successional Community (Acres)	Permanent Loss (Acres)
Scrub-Shrub	1.8	1.8	0	0
<b>Total</b>	<b>251.5</b>	<b>20.0</b>	<b>204.5</b>	<b>27.0</b>

<sup>1</sup>Disturbed-developed land is not vegetated, but included in impact calculations as a cover type.

As indicated in Table 4.4-1, only 25 acres of forestland specifically will be disturbed for the life of the Project. This long-term loss of forest habitat represents less than 1 percent of the Project area. However, there will be disturbances to wildlife habitat that extend beyond the footprint of the Project, including fragmentation and edge effects. Fragmentation of forested habitat exposes wildlife within fragments to new, adjacent ecosystems and 'edge effects' (Murcia, 1995). Edge effects are created when there is an abrupt transition (i.e. road clearing) between two ecosystems (i.e. forest fragments). Edge effects can lead to direct effects (i.e. changes in species composition and distribution) and indirect effects (i.e. changes in interactions between species such as predation, brood parasitism, or competition) to biological species (Murcia, 1995).

In an effort to quantify habitat impacts associated with fragmentation of forestland, Stantec (the Project Sponsor's avian/bat consultant) estimated the area of existing edge effect, and the area of edge effect that could result from construction and operation of the Project.

#### *Fragmentation and Edge Effects*

A summary of the size of the following impact areas within the Project area (roads, turbines, substation, and buried transmission line), including an additional designated area to represent an index of fragmentation around clearings, was conducted:

1. the existing impacted area within Project area (existing roads, forest roads, fields, and oil/gas well clearings),
2. the proposed impacted area during construction of the Project (new access roads, buried transmission line, and clearings), and
3. the proposed impacted area after restoration of the Project area.

The analysis also investigated the cumulative impacts of forest fragmentation by combining the existing impact area with the proposed impacted area. For the analysis, the amount of forest area in the Project area was quantified by visual interpretation of aerial photographs (2007; Cattaraugus County tax parcel data) of the Project area. The most intact forested areas (as of 2007) were identified and mapped.

A 250-foot buffer was designated as a metric for area of edge effect. This area was chosen because the roads between the oil and gas well clearings, representing the predominant perforation in the landscape of the Project area, are approximately 500 feet apart. It should be noted that the specified area of edge effect varies widely in the literature, depending on habitat and the species of interest (Murcia, 1995; Fletcher, 2005). For the fragmentation analysis of the three impact areas described above, an extended impact area of 250 feet on all sides of a clearing was added to the existing and proposed clearings. After clearing activities, some edge effects would be expected to lessen over time as habitat is restored in the areas cleared temporarily for construction activities. For example, impacts associated with existing logging in the Project area are considered largely temporary as harvested areas are allowed to re-vegetate, and area of edge effect would decrease as the canopy closure increased. During the recent CRA site visit, the CRA biologist observed decreased edge effects in some portions of the Project area where access roads were revegetating and the forest canopy was restoring (see FEIS Appendix M) (CRA, 2010). However, as abrupt transition zones would still exist between adjacent forest fragments after restoration, edge effects would persist to some extent. While the buffer area of edge effect may decrease after restoration, for the purposes of this analysis, the 250-foot area is used for new and old clearings.

#### *Fragmentation and Edge Effects Analysis Methods*

Aerial photographs were used to digitize the outline of the existing (non-Project) man-made clearings in the Project area including roads, forest roads, fields and other similar clearings, and the oil and gas well clearings (FEIS Appendix G, Figure 1). Old clearings or old forest roads associated with logging that appeared overgrown or unmaintained were not included in the assessment of existing clearings, nor were existing clearings along the proposed transmission line. The area of existing impacts is an approximate estimate as the aerial photo used in the analysis was taken in 2007; therefore, the summary of existing clearings does not include those portions of the Project undergoing active logging<sup>1</sup>. The specifications for proposed new clearings associated with the Project components during construction and after restoration are as presented in the DEIS. The areas for a 250-foot buffer around the boundaries of existing clearings and proposed Project component clearings were calculated.

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<sup>1</sup>The CRA biologist during the November 11 and 12, 2010 site visit observed the most intensive active logging and oil production activities going on, at the time of the site visit, in the western portion of the Project, specifically between turbines 3W and 7W. See FEIS Appendix M.

### Results

Portions of forested habitat in the Project area (not all areas of the transmission line are shown) that were deemed the most intact as of 2007 are depicted in FEIS Appendix G, Figure 1; however, some of these areas include overgrown forest roads and clearings for logging or oil and gas operations. For baseline conditions, the existing clearings (without the edge effect buffer) represent 11 percent of the Project area; the forested portions of the Project area represent approximately 89 percent of the Project area (Table 4.4-2). The area of existing clearings combined with the edge effect buffer of 250 feet constitutes 54 percent of the estimated 9,200 acre Project area.

**Table 4.4-2: Existing Landcover within Project Boundary**

Project Area	Area of Existing Clearings <sup>1</sup>	% of Project Area	Edge Effect Area <sup>2</sup>	% of Project Area	Existing Forestland	% of Project Area
9195 acres <sup>3</sup>	1021 acres	11%	4937 acres	54%	8174 acres	89%

<sup>1</sup>Area of existing clearings consists of roads, forest roads, fields, and oil/gas well clearings.

<sup>2</sup>The area within a 250 foot buffer around existing clearings.

<sup>3</sup>The Project area acreage was calculated from the aerial photo and is an approximate area; the Project area is 9,119 acres as described in the DEIS.

The proposed Project clearings, during construction, combined with the fragmentation buffer would represent 13 percent of the Project area (Table 4.4-3). The combined area for existing clearings (non-Project) and proposed Project clearings during construction, including the 250-foot buffer area, is 6,103 acres (67% of the Project area). This would represent a 19 percent increase in cleared area and area of edge effect from baseline conditions.

**Table 4.4-3: Proposed Clearings Associated with Project Components during Construction**

Project Component	Temporary Disturbance (acres)	Temporary Edge Effect Area <sup>1</sup> (acres)
Wind Turbines and Workspaces	83.7	424
New Access Roads	58.6	252
Upgraded Access Roads	11.9	67
Buried Electrical Gathering Lines	4.8	85
Buried Transmission Line	77	272
Meteorological Towers	2	20
O&M Building and associated site	2.5	8
Staging Area	5	23
Collection Station	3	9
Substation	3	9
<b>Total</b>	<b>251.5</b>	<b>1166</b>
<b>% of Project Area<sup>2</sup></b>	<b>3%</b>	<b>13%</b>

<sup>1</sup>The area within a 250 foot buffer around existing clearings.

<sup>2</sup>Based on the 9,195 acre Project area calculated from the aerial photo.

The proposed Project clearings, during the life of the Project, combined with the fragmentation buffer would represent 5 percent of the Project area (Table 4.4-4). The combined area for existing clearings and proposed Project clearings during the life of the Project, including the 250-foot buffer area is 5,366 acres (59% of the Project area). This would represent an 8 percent increase in cleared area and area of edge effect from baseline conditions.

**Table 4.4-4: Proposed Clearings Associated with Project Components during Operation (After Revegetation)**

<b>Project Component</b>	<b>Permanent Disturbance (acres)</b>	<b>Long-term Edge Effect Area<sup>1</sup> (acres)</b>
Wind Turbines and Workspaces	5.7	188
New Access Roads	15.6	209
Upgraded Access Roads	0	N/A
Buried Electrical Gathering Lines	0	N/A
Buried Transmission Line	0	N/A
Meteorological Towers	0.2	12
O&M Building and associated site	2	7
Staging Area	0	N/A
Collection Station	1.75	6
Substation	1.75	6
<b>Total</b>	<b>27</b>	<b>429</b>
<b>% of Project Area<sup>2</sup></b>	<b>0.3%</b>	<b>5%</b>

<sup>1</sup> Edge effect area is the area within a 250 foot buffer around existing clearings.

<sup>2</sup> Based on the 9,195 acre Project area calculated from the aerial photo.

During operation of the Project, and assuming the total area of the non-Project related clearings remains approximately the same, the total approximate area of forest habitat in the Project area would be 7,126 acres (77% of the Project area). Considering area of edge effect, intact forest habitat would consist of 2,808 acres (30% of the Project area). However, these areas are largely estimates as the non-Project related clearings, particularly those associated with logging, are subject to change.

As indicated in the CRA memo (2010) (FEIS Appendix M), the Allegany State Forest and Park, a 195,212 acre publically owned forest, lies to the west of the Project. This area has been designated as an Important Bird Area (IBA). FEIS Appendix G, Figure 1 shows the boundaries of the Allegany IBA that fall within the Project area. A total of 3,114 acres of the Allegany Forest IBA overlap with the boundaries of the Project area (34% of the Project area). However, as shown in FEIS Appendix G, Figure 1, the IBA in the Project area overlaps, in part, with some of the most disturbed portions of the Project area (as of 2007). In addition, the portion of the IBA that occurs within the Project boundary represents only 1.6 percent of the Allegany State Forest IBA.

It is difficult to accurately predict the level of impact clearing activities will have on forest interior species because the Project area is largely already disturbed (i.e., there is overlap between forest interior and edge habitat for breeding birds), and changes in breeding bird composition and distribution after forest clearing activities can be complex. These effects would be further complicated by those associated with other (existing/ongoing/future) land uses. In an effort to quantify impacts to forest interior birds, the breeding bird data collected at the Project area in 2008 was used to estimate the relative abundance (relative number of breeding pairs) in an area equivalent to the approximately 25 acres of forest that will be converted during operation of the Project. Table 4.4-5 shows how these values were calculated for three of the most abundant forest interior breeding bird species in the Project area. For example, as many as 5 breeding pairs of red-eyed vireos may be displaced from the 25 acres of lost forest habitat during operation of the Project.

**Table 4.4-5: Total Number of Observations and Relative Abundance at 30 50-m Radius Point Count Locations in Hardwood Forest During Three Survey Periods in Spring 2008**

Species	Total	Relative Abundance/50-m Radius Survey Area/Site Visit	Estimated Relative Abundance in 25 Acre Forest <sup>1</sup>
Black-throated green warbler	26	0.29	3.72
Ovenbird	26	0.29	3.72
Red-eyed vireo	35	0.39	5.01

<sup>1</sup>This is the area equivalent to permanently lost forest habitat.

The number of displaced red-eyed vireo would likely be greater if considering the area of edge effect. However, it may be misleading to calculate the number of individuals displaced from the total area including edge effects as some red-eyed vireo would likely nest in proximity to edges. Also, other species of breeding birds could increase in abundance due to changes in habitat in the Project Area.

#### *Impact Minimization and Avoidance Measures*

Most of the forest habitat in the Project area is already disturbed due to management activities such as logging, oil/gas extraction, and road building. The proposed turbines and access roads utilize existing clearings (i.e., log landings, abandoned oil/gas well sites, and forest roads) to the maximum extent possible, which will minimize additional fragmentation of the forest. As indicated previously, the areas used during construction that will not be part of permanent infrastructure associated with the Project will be allowed to restore to pre-construction conditions. Additionally, the following habitat impact minimization and mitigation measures that have been, or will be, adopted during planning and construction, as described in the DEIS, are outlined below.

- The 115 kV transmission line will be buried; therefore, impacts associated with permanent habitat loss due to the transmission line are minimized.
- The transmission route avoids ecological impacts to the maximum extent practicable by using existing logging/forest roads (see FEIS Appendix J) and minimizing wetland/stream crossings.
- Portions of the transmission line are sited within an old National Grid right of way (ROW). In addition, the proposed transmission line was walked with several landowners and a local forest expert in an effort to site the line with the least amount of ecological impact possible. Therefore, large portions of the transmission line occur over existing logging roads, ATV trails, and other man-made clearings.
- Installation of the 34.5 kV electrical interconnect line will be underground.
- In areas where 34.5 kV buried electrical lines are collinear with proposed access roads or existing oil/gas roads, no additional soil disturbance or vegetation clearing, beyond that anticipated for road construction, is anticipated.
- All Project components will avoid impacts to federal jurisdictional or state regulated wetlands/streams either by avoiding conflicts or using methods such as borings to cross these features.
- Appropriate sediment and erosion control measures (see Section 3.1 of the DEIS for additional information) will be implemented.
- All sediment and erosion control measures will be installed and maintained according to the Project-specific NYSDEC-approved Stormwater Pollution Prevention Plan (SWPPP) for the Project.
- Proper methods for segregating stockpiled and spoil material shall be implemented, and excavated soil will be reused to the maximum extent possible on the site that it was excavated from, as a means to limit opportunities for proliferation of non-native flora and other invasive species.
- Following construction, all temporarily disturbed areas will be stabilized and restored in accordance with approved plans.
- No plant species occurring in the Project area will be extirpated or significantly reduced in abundance as a result of construction activities.
- Mitigation of impacts to vegetation will be accomplished primarily through careful site planning. The most ecologically significant and/or sensitive features (i.e., rocky outcrops, streams, and wetlands) are being avoided to the extent practicable.
- Allegany Wind LLC will fund an environmental monitor to oversee construction and restoration activities. Prior to the start of construction at any given site, an environmental monitor and the contractor will conduct a walk-over of areas to be affected, or potentially affected, by proposed construction activities. This pre-construction walk-over will focus

on the previously identified sensitive resources to avoid, as well as the limits of clearing, location of wetland and stream crossings, location of drainage, location of underground utilities and tile lines, and layout of sedimentation and erosion control measures. Upon identification of these features, they will be marked in the field (by staking, flagging, fencing, etc.), specific construction procedures will be determined, and any modifications to construction methods or locations will be proposed before construction activities begin. During construction, the environmental monitor will assure compliance with the established methods, standard industry practices, the construction plans/documentation, and protection measures.

**Written Comment 10:**

As stated in the SEQR letter dated October 6, 2008, "The control of invasive species to minimize the spread of invasive propagules throughout the project development area, and particularly in regulated wetland and stream areas, should be discussed in the DEIS. The discussion should include measures to ensure no net increase in the areal coverage of invasive species in the project development area. Post-construction monitoring and periodic management, including invasives control and re-planting of preferred indigenous species to ensure survival should also be included in the discussion. A satisfactory Invasive Species Control Plan will be a requirement of any permits issued by DEC." While the concern for invasive species is mentioned in the DEIS, there does not appear to be any thorough discussion of how invasive species management will be carried out, either to prevent establishment, monitor for introductions and/or spread, or control if discovered. An Invasive Species Control Plan must be developed and more detail must be given as to how invasive species impacts will be minimized or prevented.

**Response to Written Comment 10:**

Please see Appendix C of this FEIS, which includes an Invasive Species Control Plan. This plan is essentially identical to other plans recently approved by the NYSDEC for wind power projects in other locations of the state, and which are currently under construction.

***The following comments are related to general concerns regarding the Project post-construction monitoring study.***

**Written Comment 1T:**

Section 3.3.3.2 Fish and Wildlife discusses aspects of the project designed to minimize impacts to birds, and states that "the Project is not anticipated to have an undue adverse impact on birds or bats, and therefore no mitigation is required." A post-construction bird and bat monitoring study will be required which includes mortality searches, bias correction testing, bat monitoring, and potential mitigation options. Upon reviewing the results of such studies, DEC may recommend mitigation for impacts to birds and bats that could include operational changes

(altering the turbine cut-in speed, changes in daily or season timing of operation, etc.), easement purchase/management, and/or removal or relocation of various offending project components.

**Written Comment 1W:**

The project sponsor should coordinate with DEC to develop an appropriate protocol for post-construction surveys that will include mortality searches, acoustical bat monitoring, and breeding bird surveys.

**Written Comment 2E:**

In addition to measures reducing the development footprint and degree of fragmentation, *Audubon strongly encourages the town to require post-construction monitoring and mitigation measures to ensure that if this project moves forward any unforeseen, unacceptable impacts to birds and other wildlife will be detected and can be addressed.*

**Oral Comment 36B:**

And one thing that I'm a little concerned about is somebody brought up a fact that there's a lot of misinformation. Well, I've looked up things from Scientific American. That's not misinformation. You know. We're talking about not only our concerns for ourselves, but, you know, you've got birds of prey that can get killed. You have bats' lungs exploding when they get behind the turbines because of the low pressure. And when the bats go, the insects go up. And it's not a just a regional problem. It's not just our backyard. It's everywhere. They migrate, they go down to Mexico.

***Response to Written Comments 1T, 1W, 2E and Oral Comment 36B:***

The Project is not anticipated to have an undue adverse impact on birds or bats, and therefore no mitigation is required. However, the NYSDEC is requesting post-construction monitoring studies at all wind power projects in New York State, and the Project Sponsor has volunteered to participate in this program in order to further the State's understanding of bird/bat interactions with wind turbines. While, like other responsible wind farm developers in New York, the Project Sponsor is willing to participate in the NYSDEC's statewide program, such participation has no relationship to SEQRA and the Findings required under SEQRA, as this FEIS has evaluated all reasonably foreseeable impacts. As discussed in DEIS Section 3.3.3.2, the post-construction study will be developed in consultation with state and federal agencies, including details such as study duration, search frequency, search areas, number and location of turbines to be searched, concurrent data collection and analysis, carcass collection, and mitigation strategies. The post-

construction study will be finalized with the agencies prior to commercial operation of the Project. In addition, a post-construction habitat displacement study will be prepared.

**Written Comment 1U:**

It is stated in the discussion of both the 2007 and 2008 reports that, other than one cerulean warbler in 2007, “no other species of concern were observed during surveys, which may indicate that the disturbed nature of the Project area does not provide quality habitat for forest interior species.” However, 3 of the species observed in the greatest numbers and with the highest relative abundance and frequencies (ovenbird, black-throated green warbler, and red-eyed vireo) are all dependent on intact forest interior habitat. Though not listed as species of concern, the presence of these birds throughout the project area during both years of survey suggests that quality forest interior habitat does indeed exist within the project area. The degree to which these and other forest-dependent species will be displaced or otherwise impacted by forest clearing, noise, movement, collision, and other associated effects of turbines is currently unknown.

**Response to Written Comment 1U:**

It is agreed that suitable habitat exists within the Project area for a variety of forest interior and forest edge nesting species. There is some information available regarding impacts to breeding birds at human-disturbed habitats, including wind developments. Impacts associated with habitat loss due to wind development are potentially complex, involving displacement, shifts in species abundance and composition, and turbine avoidance or habituation behaviors. While wind facilities generally result in relatively small amounts of habitat loss, they may create a considerable amount of edge habitat associated with turbine pad clearings, new roads, and transmission lines. The creation of forest edge habitat results in net loss of habitat for some forest dwelling species, while the same impact may increase the local population of edge species (NRC, 2007). The decrease of forest canopy can improve habitat for shrub-nesting species (NRC, 2007). However, forest interior species such as ovenbird and Blackburnian warbler (*Dendroica fusca*) may be impacted by the removal of stands of mature hardwood trees (NRC, 2007). Historically, forest harvesting and other impacts have resulted in decreases in the local populations of some species such as ovenbird, Kentucky warblers (*Oporornis formosus*), and worm-eating warblers (*Helminthos vermivorus*) (NRC, 2007). While the majority of post-construction studies at wind developments in the eastern US have focused on the more direct impact of collision mortality, there is limited information available addressing impacts to birds associated with habitat loss due to wind farm development. A study conducted at the Buffalo Ridge facility in Lincoln and Pipestone Counties in southwestern Minnesota (agricultural and grassland habitat) indicated that some species were more susceptible to displacement than others, including common yellowthroat (*Geothlypis trichas*) and certain grassland nesting species (Johnson

*et al.*, 2000). At this site, species were generally displaced from areas less than 100 m from the towers (Johnson *et al.*, 2000). However, analysis indicated that the turbines did not affect use of the area within 100 m from the towers for 65 percent of bird groups included in the study (waterfowl, shorebirds, doves, flycatchers, corvids, blackbirds, chickadees/nuthatches, tanagers/orioles, and thrushes; Johnson *et al.*, 2000). Another wind power facility, Maple Ridge (previously known as Flat Rock) located in Lewis County, New York, is situated in woodland and grassland habitat. This Project was found to not cause large-scale displacement of grassland nesting birds. At this site the densities of breeding savannah sparrow (*Passerculus sandwichensis*) and bobolink (*Dolichonyx oryzivorus*) were compared to undeveloped nearby reference plots, and it was found that nesting savannah sparrow populations experienced no displacement, and nesting bobolink populations were minimally affected only at distances under 100 m from the turbines (Kerlinger and Dowdell, 2008). A study at the Cohocton and Dutch Hill Wind Farms in Steuben County New York (agricultural fields and woodland habitat) compared the results of agricultural and forest edge breeding bird abundance and diversity between pre- and post-construction surveys. Results indicated that avoidance and displacement impacts associated with habitat alteration and operating turbines resulted in insignificant effects on the breeding bird community between pre-construction and the first year of operation (Stantec, 2010).

Habitat impact information is more limited for existing wind facilities in the east on forested mountain ridges. Breeding bird surveys were conducted prior to construction, during construction, and after construction at the Green Mountain Power Corporation's Wind Power Facility in Searsburg, Bennington County, Vermont (forested ridgeline habitat). The same diversity of species was detected during the three survey periods; however, the abundance and frequency of species at study sample sites changed over the three periods. Four of the most abundant species prior to construction, Swainson's thrush (*Catharus ustulatus*), white-throated sparrow (*Zonotrichia albicollis*), ovenbird, and red-eyed vireo (*Vireo olivaceus*), experienced declines in abundance during post-construction surveys. The decline was believed to be a result of the creation of forest edge as these birds are primarily forest interior species. Some species including blackpoll warbler (*Dendroica striata*), magnolia warbler (*Dendroica magnolia*), and dark-eyed junco (*Junco hyemalis*) remained unchanged. Yellow-rumped warbler (*Dendroica coronata*) and other edge species such as American robin (*Turdus migratorius*) and blue jay (*Cyanocitta cristata*) increased in abundance (Kerlinger, 2002). At the Lempster Wind Project in Sullivan County, New Hampshire (forested ridgeline habitat) a nest of a state threatened common nighthawk (*Chordeiles minor*) was observed in 2007 during pre-construction surveys (Woodlot Alternatives, 2007). Nest searches were conducted in 2009 after the turbines had been constructed. Though no nests were found, multiple

observations of two territorial adults and possible fledglings were made in the same vicinity of the 2007 nest (Tidhar, 2009).

At the Allegany Wind Project, it is anticipated the effects will be similar to those observed at other wind facilities in the region located in similar habitats, such as the Searsburg, VT and Lempster, NH sites which occur on forested ridgelines. The Project area largely consists of managed deciduous forest. The Project area has been disturbed by past and ongoing oil extraction and timber harvesting activities. Consequently, a system of oil wells and roads exist on the majority of the ridges within the Project area. In addition, many turbines are immediately adjacent to existing clearings, and therefore much of the turbine-related clearing will result in an extension of existing clearing. Consequently, the impacts associated with this Project are expected to be consistent with the impacts associated with current (and historic) land uses on-site.

Timber harvesting and other man-made or natural forest clearings can have a variety of effects on breeding bird communities. In the short-term, forest clearing impacts generally involve decreases in abundance of forest interior species and increases in abundance of edge-dwelling ground or shrub foragers (Heltzel and Leberg, 2006; Faccio, 2003). In the long-term, as impacted areas mature, species composition generally shifts towards previous conditions (Heltzel and Leberg, 2006). A study investigated the breeding bird community in selectively harvested bottomland forests in northeastern Louisiana. The study consisted of point count surveys in recently harvested stands (1 to 5 years post-harvest) and older harvest stands (12 to 18 years post-harvest), as well as a reference stand that had not been harvested for over 30 years. A number of species associated with shrub and forest-edge habitats were more abundant in recent harvests than in reference stands (Heltzel and Leberg, 2006). With the exception of Acadian flycatcher (which is sensitive to the creation of canopy openings), older harvests and the reference stand supported similar abundances of species (Heltzel and Leberg, 2006). In addition, older harvests had substantially higher abundances of gap-dependent species than recent cuts or the reference stand (Heltzel and Leberg, 2006). Another study investigated forest stands that had undergone clearcut or selective tree removal (in cove hardwood forest stands aged 4 to 103 years) in four successional stages: early, sapling/pole, mid, and late. The study found that late successional forest habitats create a significantly more diverse bird community than sapling/pole or midsuccessional forests (Franzreb, 2005).

Another study investigated a devastating ice storm's short-term effects on breeding birds in a northern hardwood forest in central Vermont. The study included point count surveys at pre-and post-storm impacted sites as well as at control sites. Results indicated that species richness and

diversity increased only at ice storm sites, whereas total abundance of all species combined increased at control sites. At storm-impacted sites, forest interior species showed declines while edge-dwelling ground or shrub foragers showed increases in abundance (Faccio, 2003). Three forest-interior species declined in abundance following the storm: red-eyed vireo, blackburnian warbler, and ovenbird; edge/ground-dwelling birds including dark-eyed junco and winter wren showed increases in abundance after the storm (Faccio, 2003). The results indicate that some forest management practices are similar to natural impacts like ice storms (Faccio, 2003). Impacts due to clearing for the proposed Allegany Wind Project are expected to be similar to the impacts associated with man-made or natural forest clearings described in these studies.

**Written Comment 1V:**

The entire western part of the project is within the Allegany Forest Tract IBA, including proposed turbines 1W-11W. The IBA boundary was expanded in 2008 to include a portion of the project area. Some species not typically found in New York were detected during the 2007 and 2008 surveys, including blue grosbeak and summer tanager. It was not stated in the reports whether these birds were observed west of Chipmunk Creek (within the IBA), or to the east of the creek (outside the IBA). The DEIS should include a map indicating the current IBA boundary relative to the proposed project area and turbine locations.

**Response to Written Comment 1V:**

The summer tanager (*Piranga rubra*) was detected on May 18, 2008. Due to the early observation date and that it was not seen during subsequent surveys, the bird was suspected to be a migrant. The summer tanager was seen within the Allegany Forest Tract IBA, on the west side of Chipmunk Creek. The blue grosbeak (*Passerina caerulea*) was seen on May 15, 2007, east of Chipmunk Creek, outside of the IBA. As the bird was not seen during subsequent surveys and due to the early observation date, it may also have been a migrant. A map showing the current Allegany Forest Tract IBA boundary in relation to the proposed Project area and turbine locations is included in Appendix G of this FEIS.

**Written Comment 1X:**

The DEC's Natural Heritage Inventory Program reveals no listed animal species within the proposed project area. One plant species, Appalachian Shoestring Fern (*Vittaria Appalachianiana*), is present. Impacts on this species need to be discussed further with our technical staff.

**Response to Written Comment 1X:**

As requested by the commenter, EDR has made the necessary efforts towards consulting with DEC technical staff, as outlined below:

- August 31: Emailed Steve Young, NYNHP Chief Botanist.
- August 31: Received response from Steve Young indicating we should check with Rudyard to see who he intended we consult with.
- September 7: Emailed Rudyard Edick, NYSDEC
- September 9: Emailed Jack Nasca, NYSDEC
- September 9: Received brief response from Rudyard indicating he was trying to determine who the appropriate contact is.
- September 20: Emailed Rudyard to follow up about contact information.
- September 22: Emailed Rudyard to follow up about contact information.
- September 23: Received response from Rudyard with Anne Oyer's phone number at Region 9 Office in Allegany.
- September 24: Called Anne Oyer. Anne indicated that she may not be the appropriate person to consult on this issue. She had never previously heard of Appalachian shoestring fern, nor had other folks in her office. She will meet with her boss for advice on whether she or someone at the Region 9 office should learn more about this issue, or refer the consultation to NYNHP. When they determine the appropriate steps moving forward, she will call EDR back.
- September 27: Received email from Anne Oyer indicating she forwarded the information to DEC's Lands and Forests Manager, Dave Paradowski. Dave didn't know anything about this particular concern, but he may have something to offer. Anne indicated that if EDR does not hear anything from Dave then the DEC would just have to refer EDR back to Steve Young.
- October 15: EDR has not heard back from Dave Paradowski, and therefore sent another email to Steve Young.
- October 19: EDR botanist Sara Stebbins and project manager Ben Brazell had a conversation with Steve Young.

During the October 19 conversation with Steve Young, EDR briefly explained the history of the Project review process, and the associated investigations/avoidance measures related to the Appalachian shoestring fern. Specifically, EDR stated that significant effort has been put forth to avoid impacting those rock formations that contain suitable habitat (i.e., crevices that offer protection

from direct exposure to sun, wind, precipitation) for this species, and Steve Young indicated that if such rock formations are avoided, then he is not concerned about potential impacts to the Appalachian shoestring fern. A discussion then followed regarding the potential situation during construction where it appears that unavoidable impacts to such rock formations may occur. It was determined that the Environmental Monitor would identify such situations, and immediately contact Steve Young. A qualified botanist (e.g., Steve Young, Sara Stebbins) would then survey the potentially effected rock formation(s) to determine the presence (or lack thereof) of this species.

In addition, because the Appalachian bristle fern has the same habitat requirements/characteristics as the shoestring fern, the Project Sponsor will use the same approach to avoid potential impacts to this species.

**Written Comment 1Y:**

Although not indicated on the Natural Heritage Inventory maps there is some information available on the possible breeding of a listed “special concern” bird species within the project area. The species Cerulean Warbler, (*Dendroica cerulean*) was detected by the Allegany Wind Project consultants during a June, 2007 breeding bird survey of the project area. In addition the Second Atlas of Breeding Birds in New York State indicates that Cerulean Warbler was a possible breeder in BBA Block 1966C which is a block immediately west of the project. This species is a bird of large intact forests and is very sensitive to forest fragmentation. If it is present on the project site the increased forest fragmentation resulting from the construction of the towers and connection lines would likely have negative impacts on Cerulean Warblers using the project area as habitat. The Allegany State Park and Vicinity Population of Cerulean Warblers is one of the most significant populations of this species in New York. The number of blocks reporting Cerulean Warblers within the Appalachian Plateau declined by 17% from the first atlas to the second and most recent atlas.

**Response to Written Comment 1Y:**

There was one cerulean warbler detected incidentally between point count surveys during the 2007 breeding bird survey. There were no cerulean warblers detected during the 2008 surveys. Cerulean warblers primarily rely on tracts of mature deciduous forest, especially along stream valleys or moist, upland slopes (Hamel, 2000). The Project area mainly consists of managed deciduous forest and a system of roads and oil wells exist throughout most of the Project area, and no turbines or access roads are sited within stream valleys. The 2007 and 2008 breeding bird survey points were positioned along ridgetop habitats within the Project area where the turbines are to be located. The habitat available at the proposed turbine locations may explain why a breeding population of this

species was not detected within the Project area. It is anticipated that the Project will not negatively impact the breeding habitat of the regional population of cerulean warbler.

**Written Comment 2A:**

On behalf of Audubon New York, the nearly 50,000-member state program of the National Audubon Society, I want to thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Allegany Wind Project in the Town of Allegany, New York. The mission of Audubon New York is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity. Audubon New York has interest in this project because it is partially located within an area Audubon recognized as the Allegany Forest Tract Important Bird Area (IBA).

**Response to Written Comment 2A:**

A map showing the current Allegany Forest Tract IBA boundary in relation to the proposed turbine locations is included in this FEIS (see FEIS Appendix G).

***The following comments are related to general concerns regarding species of conservation concern occurring within the Project area.*****Written Comment 1Z:**

Although no other endangered, threatened or listed animal species are shown in the Natural Heritage Inventory new information on the presence of such species may become available in the future and possible during the planning and construction of the Allegany Wind Power Project. At such time protection of such species and their associated habitats may be required by this Department.

**Written Comment 2B:**

The Important Bird Areas (IBA) Program identifies sites in New York that provide critical habitat for birds based on a set of standardized site criteria. The Allegany Forest Tract IBA was identified as an IBA because it supports an assemblage of forest nesting species of conservation concern in a relatively unfragmented landscape as well as a number of state-listed endangered, threatened and special concern species. Audubon's list of birds of conservation concern includes federally and state-listed species, but also other species that are also considered to be of concern based on assessments conducted by several different organizations and initiatives at a range scales. Our comprehensive list of species of conservation concern is informed by a global perspective to ensure that conservation actions here in New York contribute to regional and continental goals, as well as a state-centric perspective to help maintain the full range of avian diversity here in New York.

**Written Comment 2C:**

Forest species of conservation concern found within the IBA include Sharp-shinned Hawk, Black-billed Cuckoo, Northern Flicker, Eastern Wood-Pewee, Least Flycatcher, Yellow-throated Vireo, Blue-gray Gnatcatcher, Wood Thrush, Black throated Blue Warbler, Cerulean Warbler, Black-and-white Warbler, Louisiana Waterthrush, Hooded Warbler, Canada Warbler, Scarlet Tanager, and Rose-breasted Grosbeak. Additional state-listed species supported to the IBA include Osprey, Bald Eagle, Cooper's Hawk, and Northern Goshawk. Bald Eagles and Cerulean Warblers are found in relatively high concentrations compared to other sites in New York. *The species identified as part of the DEIS avian studies confirm the IBA status and indicate that the project area does not indeed support a number of the birds of conservation concern (as defined above), including the Cerulean Warbler.*

**Response to Written Comments 1Z, 2B and 2C:**

Breeding bird surveys were conducted throughout the Project area in 2007 and 2008. There was a cerulean warbler, a state special concern species, observed incidentally between point count surveys in 2007. However, no other species of state special concern, and no federal or state threatened or endangered species were observed during the 2007 and 2008 surveys. Among the species observed during the 2007 and 2008 breeding bird surveys, there were four species listed under the Audubon Watch List (2007): Canada warbler (*Wilsonia canadensis*), cerulean warbler, Kentucky warbler, and wood thrush (*Hylocichla mustelina*). These species are ranked yellow (declining or rare species) and there were no species ranked as red (species that are declining rapidly and/or have very small populations or limited ranges, and face major conservation concern) under the Audubon Watch List observed during the 2007 and 2008 surveys (Audubon, 2011). Among the species observed during the 2007 and 2008 breeding bird surveys, there were 27 species listed as conservation concern by Partners in Flight (2005): American redstart (*Setophaga ruticilla*), Baltimore oriole (*Icterus galbula*), black-and-white warbler (*Mniotilta varia*), black-billed cuckoo (*Coccyzus erythrophthalmus*), Blackburnian warbler, blackpoll warbler, black-throated blue warbler (*Dendroica caerulescens*), black-throated green warbler (*Dendroica virens*), blue-headed vireo (*Vireo solitarius*), broad-winged hawk (*Buteo platypterus*), Canada warbler, cerulean warbler, downy woodpecker (*Picoides pubescens*), eastern towhee (*Pipilo erythrophthalmus*), eastern wood-pewee (*Contopus virens*), field sparrow (*Spizella pusilla*), hooded warbler (*Wilsonia citrina*), indigo bunting (*Passerina cyanea*), Kentucky warbler, magnolia warbler, northern flicker (*Colaptes auratus*), northern parula (*Parula americana*), rose-breasted grosbeak (*Pheucticus ludovicianus*), scarlet tanager (*Piranga olivacea*), veery (*Catharus fuscescens*), wood thrush, and yellow-bellied sapsucker (*Sphyrapicus varius*). While many of

these species are of conservation concern due to dwindling habitat or declining regional populations, it should be noted that the majority of these species are regionally common and are typical of the habitat which occurs within the Project area. Exceptions would include a few species suspected to be migrants, such as summer tanager, blue grosbeak, blackpoll warbler, Nashville warbler (*Vermivora ruficapilla*), and field sparrow (*Spizella pusilla*); these birds were observed during mid-to-late May surveys and were not seen during subsequent surveys.

**Written Comment 7D:**

We have read about their effects on bats, and birds, and wildlife and we do not want to lose their presence. In fact, we may see an increase in mosquitoes and west Nile virus.

**Response to Written Comment 7D:**

It is acknowledged that there will be impacts to wildlife, including minor loss of habitat, possible forest fragmentation, wildlife displacement due to the presence of the wind turbines, and minor avian and bat mortality as a result of collisions with the wind turbines. However, no population will be significantly affected by these impacts. The potential increase in mosquitoes and “west Nile virus” is unsubstantiated.

**Written Comment 16H:**

Another thing that I find confusing is the position of the NYSDEC. My understanding is that the DEC makes no objection to negative effects on wildlife in the area because none of the affected wildlife is officially listed as threatened. So, I ask, is it therefore acceptable to drive wildlife toward being officially declared threatened before acting responsibly!? For example, the area where the array is to be built is the same area that has prime black bear habitat and den sites. Surely this project will affect bear populations negatively. I fail to understand why that is acceptable. And bears are just an example; the greatest threat to species worldwide is habitat fragmentation, a situation to which this project will cause further damage.

**Response to Written Comment 16H:**

As indicated in Section 3.3.2.1.2 of the DEIS, reclusive species such as black bear and bobcat are the most likely species to be disturbed/displaced by construction activities. However, construction activities are temporary and the potential disturbance/displacement will not adversely affect local populations. Regarding habitat fragmentation, see response to Written Comments 1N, 1R, 1S, 2D, 50A, 50B, 51A and Written Comment 1U.

**Written Comment 54QQ:**

Provide concurrence from the NYSDEC on the proposed approach to use the Environmental Monitor to document impacts and avoidance measures for habitat for threatened species such as the Appalachian shoestring fern, Appalachian bristle fern, and Cerulean warbler.

**Response to Written Comment 54QQ:**

With respect to the Appalachian shoestring fern and Appalachian bristle fern, please see Response to Written Comment 1X. With respect to the Cerulean warbler, the Project is not anticipated to negatively impact the breeding habitat of the regional population of cerulean warbler, and therefore pre-construction habitat surveys for this species are not anticipated (see Response to Written Comment 1Y). In addition, the Project is not anticipated to have an undue adverse impact on any birds or bats, and therefore no mitigation is required. However, the NYSDEC is requesting post-construction monitoring studies at all wind power projects in New York State, and the Project Sponsor has volunteered to participate in this program in order to further the State's understanding of bird/bat interactions with wind turbines (please see Response to Written Comments 1T, 1W, 2E, and Oral Comment 36B for additional information).

**Oral Comment 23B:**

So then we started looking into wind turbines and looking stuff up on the Internet. One of the reasons that we used to think that we wanted this wind energy is because we wouldn't have quite as much imported oil. Then I found that oil is only about – only one percent of the oil is used to generate electricity. So that – that's not a very good reason I guess.

**Response to Oral Comment 23B:**

All forms of electric generation results in environmental impact; however, wind power has been shown to have the least amount of impact.

As presented in Section 3.3 of the DEIS, *"The development of wind power projects can legitimately be considered a form of mitigation, in that power generated from the wind can satisfy demand that would otherwise utilize power generated by other means. All electric generating facilities impact ecological resources (fish, wildlife, natural communities). However, as indicated in Table 10, environmental impacts that result from more traditional power generating facilities such as fossil fuel, hydroelectric, and nuclear are much more significant than the impacts caused by wind power projects.*

**Table 10. Environmental Impacts of Electricity Sources.**

	<b>Wind</b>	<b>Hydro</b>	<b>Nuclear</b>	<b>Coal</b>	<b>Natural Gas</b>
<i>Global Warming Pollution</i>	<i>None</i>	<i>None</i>	<i>None</i>	<i>Yes</i>	<i>Yes</i>
<i>Air Pollution</i>	<i>None</i>	<i>None</i>	<i>None</i>	<i>Yes</i>	<i>Limited</i>
<i>Mercury</i>	<i>None</i>	<i>None</i>	<i>None</i>	<i>Yes</i>	<i>None</i>
<i>Mining/Extraction</i>	<i>None</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Waste</i>	<i>None</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>None</i>
<i>Water Use</i>	<i>None</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Habitat Impacts</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>

(AWEA, 2008e).

*These impacts include a larger project footprint, which results in direct habitat loss; the use of surface waters for generation and/or thermal regulation, which results in thermal discharge, fish entrainment, and impingement; the extraction and transportation of raw materials, which results in habitat disturbance and air pollution; waste disposal, which increases the effective footprint of a project and presents pollution/contamination concerns; air pollution, which results in acid precipitation and the subsequent affects on ecological resources; and/or continued contribution to global warming, which is perhaps the greatest potential impact to ecological (and human/cultural) resources worldwide.”*