



COPPERHEAD
ENVIRONMENTAL CONSULTING

Rocky Forge Breeding Bird Survey Summary Report

Botetourt County, Virginia

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TABLE OF CONTENTS

Introduction	1
Study Area	1
Methodology.....	1
Task 1: Breeding Bird Survey	1
Task 2: Focal Species Surveys.....	2
Results.....	4
Discussion	6
Literature Cited	7

TABLES

Table 1. State listed and Tier 1/Tier 2 SGCN of interest potentially present within the proposed Rocky Forge Wind Project, their associated habitat preferences, and the corresponding potentially suitable points targeted for additional field surveys.....	3
Table 2. Species confirmed on the western ridge of the Rocky Forge Wind Project.	5

FIGURES

Figure 1. Average number of individual birds detected per point per survey.....	6
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APPENDICES

Appendix 1 – Project Area Map

INTRODUCTION

Copperhead Environmental Consulting, Inc. (Copperhead) completed breeding bird surveys of the western ridge of the Rocky Forge Wind Project (project) as requested by the Virginia Department of Game and Inland Fisheries. The objectives of the surveys were to assess breeding bird use along the western ridge of the project and evaluate potential use by state threatened or endangered or Tier 1/Tier 2 Virginia Species of Greatest Conservation Need (SGCN). Copperhead biologists completed point-count surveys, habitat assessments, and playback surveys on 5 June and 28 June 2016.

STUDY AREA

The study area is approximately 3 kilometers in length along the western ridge of the project, a predominantly north-south ridgeline, located approximately 20 kilometers southeast of Covington, Virginia. Terrain within the region consists of steeply sloped ridges of primarily deciduous forests with valleys cleared for agriculture and pasture. Near the higher elevation portions of the ridge line, the study area is characterized by minimal top-soil, generally shorter and well-spaced trees, and a minimal shrub layer. At lower elevations within the study area, vegetation was dominated by closed-canopied, deciduous-dominant forests with minimal shrub layers. Cleared grasslands were present at both the north and south ends of the surveyed area (Appendix 1).

METHODOLOGY

Task 1: Breeding Bird Survey

Twelve survey points, located approximately 250-meters apart, were established to assess breeding bird species composition within the study area (Appendix 1). Points were placed to maximize distribution within the study area and were assigned prior to crews reaching the field. Survey methods were modified from the "Handbook of Field Methods for Monitoring

Landbirds” (Ralph et al. 1993). Each round of surveys was conducted more than 21 days apart (VDEQ 2013).

Each survey consisted of an unlimited radius plot, and distances to detected individuals were estimated based on four distance categories (< 20m, 20m – 50m, 50m – 100m, > 100m; see Rosenstock et al. 2002). Counts occurred from ½ hour before sunrise until 1030 hr. Biologists conducted a five-minute count (divided into a 3-minute and 2-minute interval) at each point to ensure corroboration with former bird surveys conducted by Western Ecosystems Technology, Inc. on the remainder of the project area (Tyrell 2015), and to enable an estimate of species-specific call rates.

The following data was collected for all birds identified during the survey: species, distance from observer, activity (e.g., perching, feeding, hunting, hovering, nest building, singing), time and interval of initial detection, and type of detection (audio or visual). Environmental conditions, including approximate cloud over (%), temperature (°F), and wind speed (mph) were recorded during each survey. Temperature and wind speed were measured with a LaCrosse Technologies™ handheld anemometer with integrated thermometer.

Task 2: Focal Species Surveys

Desktop habitat assessments were completed for the following Tier 1/Tier 2 SGCN: peregrine falcon (*Falco peregrinus*), golden-winged warbler (*Vermivora chrysoptera*), loggerhead shrike (*Lanius ludovicianus*), cerulean warbler (*Setophaga cerulean*), and black-billed cuckoo (*Coccyzus erythrophthalmus*) prior to entering the field using land-use and canopy composition values from NLCD and DEM databases (Table 1; Appendix 1). Areas determined through desktop analysis to have potentially suitable habitat for these focal species were assessed in the field, and those areas confirmed to have suitable habitat were surveyed using species-specific playback surveys.

No peregrine falcon surveys were completed because no suitable nesting habitat was identified within five kilometers of the study area during our desktop habitat assessment, and no nesting habitat was identified during previous breeding bird surveys completed for the project (Tyrell 2015). Potential breeding habitat for the other focal species was present onsite, and playback surveys were completed for the golden-winged warbler (points 3, 4, and GWWA [added in the field based on identification of additional suitable habitat]), loggerhead shrike (points 2 & 12),

cerulean warbler (points 1, 3, 4, 5, and 9), and black-billed cuckoo (points 1, 3, 4, and 9). The cerulean warbler and black-billed cuckoo are both generally vocal and identifiable species during regular point-count surveys, so playback surveys were not originally considered; however, due to the presence of potentially suitable habitat, the timing of surveys, and the presence of cerulean warblers on the eastern ridge (Tyrell 2015), playback surveys were conducted. Playbacks are a useful sample method for cerulean warblers due to their aggressive territoriality. Because the surveys were done late in the cerulean breeding cycle, regular calls may have declined and it was deemed appropriate to use playbacks to increase detection potential. Black-billed cuckoo playbacks were only completed during the second round of surveys because they generally breed later in the season (Spencer 1943).

Table 1. State listed and Tier 1/Tier 2 SGCN of interest potentially present within the proposed Rocky Forge Wind Project, their associated habitat preferences, and the corresponding potentially suitable points targeted for additional field surveys.

Species	Habitat Preferences	Points with suitable habitat
Peregrine falcon	Nesting takes places on cliff faces while foraging tends to occur over open clearings within 5 km of nests.	N/A
Golden-winged warbler	Occurs in early successional habitats with dense shrub layers. They will choose nearby tall trees to perch and sing.	Points 3, 4, and GWWA
Loggerhead shrike	Occurs in open areas with the presence of thorny woody vegetation or barbed wire. Shrike impale prey on these thorns.	Points 2 and 12
Cerulean warbler	Mature deciduous forests. They tend to nest in areas with relatively dense canopy, and nests average 9 m above the ground.	Points 1, 3, 4, 5, and 9
Black-billed cuckoo	Generally found in large tracts of (primarily) deciduous forests.	Points 1, 3, 4, 5, and 9

Playback surveys were conducted using a FoxPro Inferno™ game-call loudspeaker system pre-programmed with songs of focal species. All playbacks began with 5-minutes of silence during which time the breeding bird survey was completed. Warbler playbacks consisted of 30 seconds broadcast, 60 seconds silence, 60 seconds broadcast, 60 seconds of silence, 30 seconds broadcast,

and 60 seconds silence. Loggerhead shrike playbacks consisted of 30 seconds broadcast, 60 seconds silence, 30 seconds broadcast, 60 seconds silence, 30 seconds broadcast, and 60 seconds silence. Black-billed cuckoo playbacks consisted of 60 seconds of playback, 60 seconds of silence, 60 seconds of playback, 60 seconds of silence, 60 seconds of playbacks, and 120 seconds of silence.

RESULTS

Point count surveys resulted in the detection of 142 individual birds of 34 species (Table 2). Most detections occurred at points 1, 2, and 12, which were lower in elevation, near or within open clearings surrounded by deciduous forest, and were relatively shallow in slope as compared with the rest of the ridgeline (Figure 1). Points 6 through 9, which consisted of terrain with minimal top-soil, generally smaller and well-spaced trees, and a minimal shrub layer were lower quality habitat for most songbird species and provided fewer observations. No federal or state listed species, Tier 1/Tier 2 SGCN, or raptors were observed during the surveys or while travelling between points.

Potential breeding habitat identified during a desktop exercise was validated and investigated by field crews. Habitat assessments indicated marginal habitat for loggerhead shrikes due to a paucity of open habitat, suitable perch locations, and limited impaling stations; playback surveys resulted in no detections at point 2 or 12. Playback surveys for golden-winged warblers were completed at points 3 and 4, and at point GWWA (Appendix 1); no golden-winged warblers were detected. The first round of golden-winged warbler surveys included a modified playback methodology due to an issue with call volume. Only the Type I song was played, and focused later in the day to correspond with common call use (Highsmith 1989). The second round of surveys incorporated both the Type I and Type II golden-winged warbler songs. Moderate cerulean warbler habitat was present at points 4 and 5, and low quality habitat was present at points 1, 3, and 9. Playback surveys for cerulean warbler were completed at these points, but none were detected. Black-billed cuckoo habitat was of moderate quality at points 1 and 4, with low quality habitat at points 3 and 9. Playback surveys for black-billed cuckoo point resulted in no detections.

Table 2. Species confirmed on the western ridge of the Rocky Forge Wind Project.

Species	Latin Name	Alpha Code	Number Detected
American Crow	<i>Corvus brachyrhynchos</i>	AMCR	2
American Goldfinch	<i>Spinus tristis</i>	AMGO	2
Black-and-white Warbler	<i>Mniotilta varia</i>	BAWW	1
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	BGGN	1
Blue-headed Vireo	<i>Vireo solitaries</i>	BHVI	1
Brown-headed Cowbird	<i>Molothrus ater</i>	BHCO	1
Blue Jay	<i>Cyanocitta cristata</i>	BLJA	3
Cedar Waxwing	<i>Bombycilla cedrorum</i>	CEDW	2
Chipping Sparrow	<i>Spizella passerine</i>	CHSP	5
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	EATO	14
Eastern Wood Pewee	<i>Contopus virens</i>	EWPE	13
Field Sparrow	<i>Spizella pusilla</i>	FISP	1
Hermit Thrush	<i>Catharus guttatus</i>	HETH	1
Hooded Warbler	<i>Setophaga citrina</i>	HOWA	1
Indigo Bunting	<i>Passerina cyanea</i>	INBU	24
Kentucky Warbler	<i>Geothlypis Formosa</i>	KEWA	5
Mourning Dove	<i>Zenaida macroura</i>	MODO	5
Northern Cardinal	<i>Cardinalis cardinalis</i>	NOCA	3
Northern Flicker	<i>Colaptes auratus</i>	NOFL	2
Ovenbird	<i>Seiurus aurocapilla</i>	OVEN	1
Pileated Woodpecker	<i>Dryocopus pileatus</i>	PIWO	1
Pine Warbler	<i>Setophaga pinus</i>	PIWA	8
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	RBWO	1
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	RBGR	5
Red-eyed Vireo	<i>Vireo olivaceus</i>	REVI	14
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	RHWO	1
Scarlet Tanager	<i>Piranga olivacea</i>	SCTA	6
Summer Tanager	<i>Piranga rubra</i>	SUTA	1
Tufted Titmouse	<i>Baeolophus bicolor</i>	TUTI	1
White-breasted Nuthatch	<i>Sitta carolinensis</i>	WBNU	2
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	WEWA	7
Wood Thrush	<i>Hylocichla mustelina</i>	WOTH	4
Yellow-breasted Chat	<i>Icteria virens</i>	YBCU	1
Yellow-throated Vireo	<i>Vireo flavivirons</i>	YTVI	2

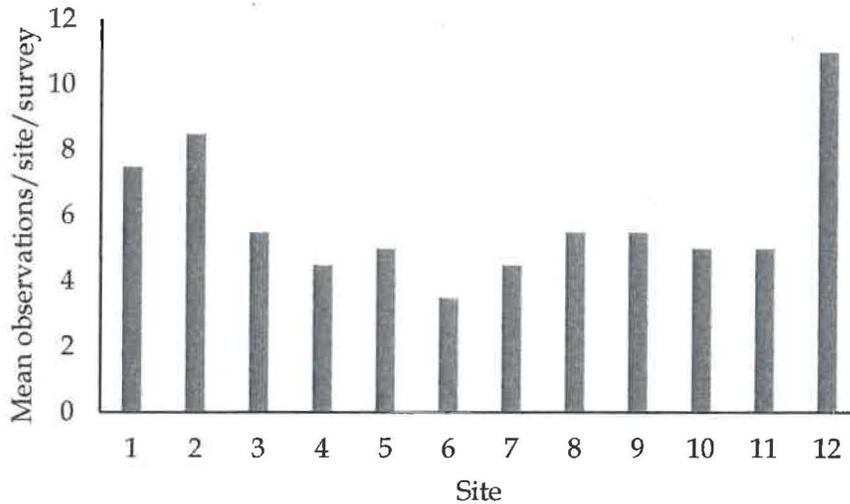


Figure 1. Average number of individual birds detected per point per survey.

DISCUSSION

Habitat within the project footprint is widespread throughout the surrounding landscape. Frequently observed species included eastern towhee, eastern wood pewee, indigo bunting, and red-eyed vireo, which are common species in deciduous forests and edge habitats. The western ridge of the project area consisted of some of the steeper slopes and ridgelines in the area, but those locations corresponded with our lowest individual observations. Bird activity was higher at lower elevations and decreased as surveyors approached the peak of the ridgeline, suggesting that this habitat feature may be limiting for songbird presence during the breeding season. Surveys occurred well within the recommended time frame for morning point-counts and the decreased bird activity is considered to be a result of shifts in habitat. Canopy closure was thinner, trees were more sparse and smaller, and the substrate showed more exposed rock along the ridge than in the lower points. It was determined that the suitable breeding habitat for focal species was generally absent or sporadic on the landscape and therefore unlikely to support populations of these species. None of the focal species responded to playbacks, nor were they heard passively, suggesting very low use of the study area. No federal or state threatened or endangered species, Tier 1/Tier 2 SGCN, or raptors were observed during survey efforts.

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Appendix A
Project Area Map



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Rocky Forge Wind Project

Breeding Bird Survey



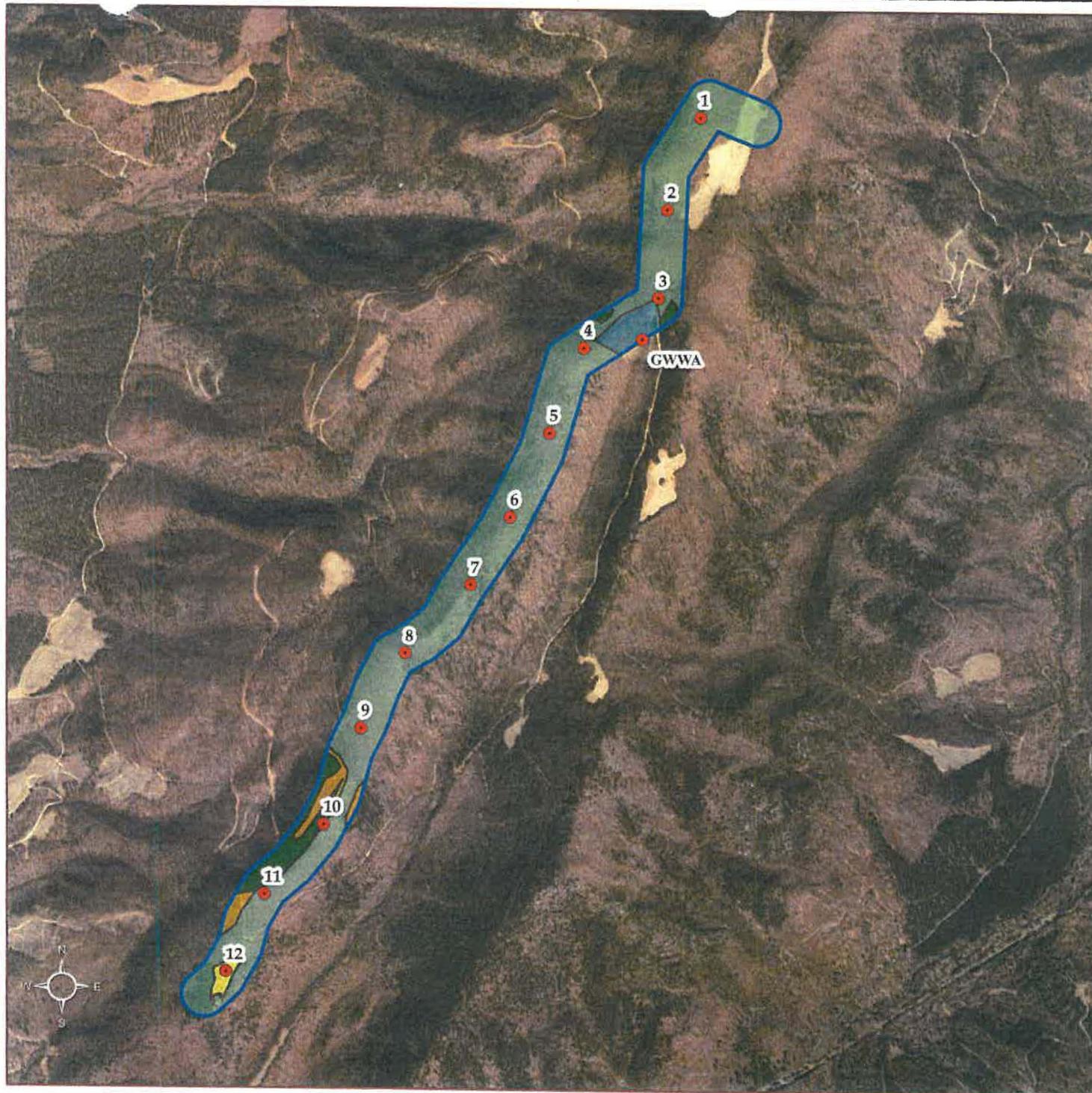
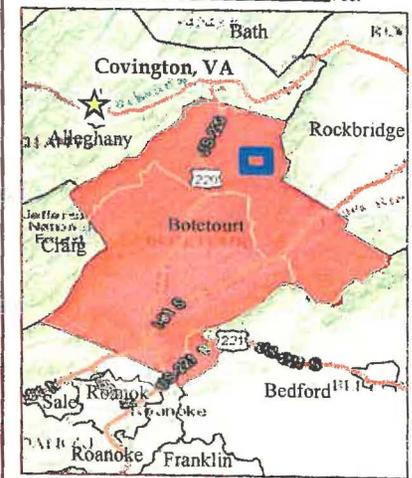
Botetourt County, Virginia

- Breeding Bird Survey Sites
- Study Area
- Conifer: 5.48%
- Deciduous: 83.61%
- Early Successional: 3.3%
- Hay/Pasture: 1.42%
- Mixed Forest: 6.2%

Coordinate System:
NAD 1983 StatePlane
Virginia South FIPS
4502 Feet
Projection: Lambert
Conformal Conic
Datum: North
American 1983

1:18,000
or
1 inch = 1,500 ft

0 250 500 1,000 1,500 2,000 Feet



Spatial distribution of breeding bird survey sites with NLCD & field survey land classifications in the study area.

