

**AVIAN POINT COUNT SURVEYS IN THE BLUESTONE
NATIONAL SCENIC RIVER AREA ^{1,2,3}**

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PROJECT SUMMARY

This is the second report submitted by the author in partial fulfillment of a subcontract to assess avian distribution patterns in the Bluestone watershed. The report summarizes data collected in 1999 and compares these data with those of 1998. Data were collected at Little Bluestone, Indian Creek, and Mountain Creek. The most numerous species detected in 1999 were the Red-eyed Vireo (2 birds per count), Scarlet Tanager (1.26 birds/point), Ovenbird (1.1 birds/point), Wood Thrush (1.0 birds/point), American Crow (0.90 birds/point), Acadian Flycatcher (0.81 birds/point), Black-and-white Warbler (0.57 birds/point), Worm-eating Warbler (0.45 birds/ point), Carolina Wren (0.44 birds/point) and Northern Parula (0.44 birds/point). These are diagnostic species of mature forest and riparian, floodplain forest. Differences among sites are discussed, and species-specific differences in abundance among the sites are of great management interest and merit of further work, especially in reference to habitat variation, topology, and other causal predictions.

These data should be used as (1) baseline biodiversity inventory, (2) baseline data for establishment of long-term trend analyses, and for further detailed study such as those proposed by Canterbury (unpubl. research proposal 1998). If further research is continued at these avian point counts and transects it should be conducted by the same principal investigators of the present study to avoid observer variability and sampling bias.

A total of 58 landbird species (excluding raptors) was observed among the three study areas. Nine raptor species were noted in the Bluestone watershed with the Screech Owl being the most abundant. Sixteen waterfowl species were noted during fall and winter along the Bluestone River spanning an area between Meador camping area and Little Bluestone.

ABSTRACT

Point count surveys and singing male censuses were used to assess bird species abundance and diversity at three areas (Indian Creek, Little Bluestone, and Mountain Creek) in June-July 1999. The most numerous species at Indian Creek were the Red-eyed Vireo, American Crow, Wood Thrush, Ovenbird, Scarlet Tanager, Acadian Flycatcher, and Black-throated Green Warbler, which are typical birds of mature Eastern deciduous forests. The Red-eyed Vireo was also the most numerous species at the Little Bluestone watershed. Others included Scarlet Tanager, Acadian Flycatcher, Carolina Wren, Wood Thrush, Eastern Towhee, Tufted Titmouse, Northern Parula, American Redstart, and Kentucky Warbler. Little Bluestone and the area extending between Jumping Branch and Bluestone State Park harbor more extensive edge habitat as well as riparian forest with scattered old fields, which explains the occurrence of species such as Eastern Towhee, Carolina Wren, Northern Parula, and American Redstart. Mountain Creek is similar to Indian Creek with mature forest sloped hillsides and ravines and canopy-dwelling species, such as Wood Thrush, Red-eyed Vireo, and Scarlet Tanager. The Mountain Creek area did, however, support more Black-and-white and Worm-eating Warblers because of more extensive ravines and hillsides with scattered hemlock.

The present study provides baseline data on bird populations in the Bluestone Watershed and will be part of a biodiversity inventory. These data along with surveys of raptors and waterfowl are presented in management-context based recommendations and a call for future studies.

METHODS

Point counts were conducted along transects established by Dr. Thomas K. Pauley and his students. Methods are described in the 1998 report and will be briefly noted here. Birds were counted at same points as last year, except this year field assistants and I counted birds at pitfall traps five and eight along the transects, in addition to three new points at Indian Creek, and nine at Mountain Creek. Field assistants and I did not cover Mountain Creek last year and the new points added along Little Bluestone study area were added sw of the junction between the Bluestone and Little Bluestone Rivers. Counts were conducted by the Co-PI, Dollie Stover, and Allen Waldron. Students from Concord College assisted with data recording in the field and as a learning experience.

Birds were counted for three, five, and 10 minutes within a 50 meter radius. Points were spaced at least 250 meters apart along the transect. Counts were conducted from 0600-1100 AM. Point counts were conducted three to five times each at Little Bluestone, Indian Creek, and Mountain Creek in June-July 1999. Singing male censuses were conducted during the afternoon hours from 1500-1700 h and consisted of noting each territorial singing male during a walk of the entire study area. The average number of birds per species per point were calculated at each study area. Species differences across sites are shown in table format.

Diurnal raptors (e.g., hawks) and nocturnal raptors (owls) were counted two times each using song-playback, since point counts do not always assess their populations well. Raptors were noted during the hours mentioned above and owls were noted from 2100-2400 h. Waterfowl along the Bluestone River between the Little Bluestone and Meador camp ground were counted five times from October 5 - December 15. Data on these latter two surveys are presented in tabular format.

RESULTS

Table 1 shows mean number of birds counted per species. The most numerous species at Indian Creek were the Red-eyed Vireo, American Crow, Wood Thrush, Ovenbird, Scarlet Tanager, Acadian Flycatcher, and Black-throated Green Warbler, which are typical birds of mature Eastern deciduous forests. The Red-eyed Vireo was also the most numerous species at the Little Bluestone watershed. Others included Scarlet Tanager, Acadian Flycatcher, Carolina Wren, Wood Thrush, Eastern Towhee, Tufted Titmouse, Northern Parula, American Redstart, and Kentucky Warbler. Little Bluestone and the area extending between Jumping Branch and Bluestone State Park harbor more extensive edge habitat as well as riparian forest with scattered old fields, which explains the occurrence of species such as Eastern Towhee, Carolina Wren, Northern Parula, and American Redstart. Mountain Creek is similar to Indian Creek with mature forest, sloped hillsides and ravines and canopy-dwelling species, such as Wood Thrush, Red-eyed Vireo, and Scarlet Tanager. The Mountain Creek area did, however, support more Black-and-white and Worm-eating Warblers because of more extensive ravines and hillsides with scattered hemlock.

Data were similar to last year in that Red-eyed Vireo and Black-and-white and Black-throated Green Warblers, and the Ovenbird were more abundant at Indian Creek than Little Bluestone. Likewise, riparian species such as Blue-gray gnatcatcher, Northern Parula, Cerulean Warbler and American Redstart were more abundant at Little Bluestone than the other two sites. These species occurred in about the same numbers in both years.

Table 2 shows the species observed feeding fledglings during the study. Wild Turkeys were seen at all sites, but no estimates of their numbers were made. Young turkeys were seen at Indian Creek on 11 July 1999 and Little Bluestone on 1 July 1999. Young Canada Geese were seen on 11 June and 1 July along Bluestone River near pitfall 9. Table 3 shows results from raptor survey using song playback. Nine raptor species were noted at Little Bluestone, while the other two sites had seven species each. Table 4 shows highest number of waterfowl noted in the fall 1999. On December 12, 1999, 25 Ring-billed gulls were noted near Meador camp ground in Bluestone State Park

DISCUSSION

The low number of shrub or understory nesting birds is of special concern, especially at Indian Creek. At this site, I noted high numbers of deer and the forest is virtually void of a shrub layer and Hooded and Kentucky Warblers, while canopy species such as the Red-eyed Vireo and Scarlet Tanager were abundant. Therefore, the impacts of deer on forest birds merit further study.

These data cannot be used to predict trends, because we do not have enough years of data. Likewise, density estimates for some species (see Table 1) should be interpreted with caution because, for example, some species occurred in low numbers due to the cold spring season this year or the dry summer. This is not to say they declining in number in the study area. For example, field assistants and I found relatively low numbers of Eastern Wood-Pewees (0.38 birds per point) in the study areas and they were low in all my study areas throughout southern West Virginia, where they occurred in relatively high numbers in recent years (0.75 - 1.2 birds per point). These data indicate why we need long-term studies to estimate population trends and

to determine how variables such as weather, vegetation, etc. play a role in avian species abundances, similar to what I proposed to the New River Gorge National River Wildlife Management a few years ago. These data tell us what is present in the Bluestone National Scenic River Area in a given year or season, but they cannot tell us much about habitat use and productivity and whether there are species-specific source or sink populations (see proposal titled "Assessment of avian populations along an elevation gradient in the New River Gorge National River, West Virginia," February 1998).

Point count surveys of singing male landbirds, raptor surveys, and counts of wintering waterfowl are provided in this study as part of a biodiversity inventory and are indicative of a few management concerns and need of further research.

Two appendices are provided that present (1) a one day count of spring migrants by the Co-PI and members of the Concord College Biology 230 (Ornithology) class in the Bluestone State Park area and (2) days of counts.

REFERENCES

Canterbury, R. A. 1998. Assessment of avian populations along an elevation gradient in the New River Gorge National River. Unpubl. research grant proposal submitted to the New River Gorge National River section of the National Park Service, Glen Jean, W. Virginia February 9, 1998.

Canterbury, R. A. 1999. Point count surveys in the Bluestone National Scenic River Area. Unpubl. rep. submitted to the New River Gorge National Park Service, Glen Jean, W. Virginia. January 11, 1999.

Table 1. Species-specific mean number of birds per site.

<u>Species</u>	<u>Indian Creek¹</u>	<u>Little Bluestone²</u>	<u>Mountain Creek³</u>
<u>Mourning Dove</u>	<u>0.23</u>	<u>0.25</u>	<u>0.25</u>
<u>Black-billed Cuckoo</u>	<u>0.08</u>	<u>0</u>	<u>0.08</u>
<u>Yellow-billed Cuckoo</u>	<u>0</u>	<u>0.17</u>	<u>0.25</u>
<u>Chimney Swift</u>	<u>0</u>	<u>0.17</u>	<u>0</u>
<u>Ruby-throated Hummingbird</u>	<u>0.08</u>	<u>0.25</u>	<u>0.33</u>
<u>Belted Kingfisher</u>	<u>0.15</u>	<u>0.17</u>	<u>0.12</u>
<u>Ruffed Grouse</u>	<u>0.17</u>	<u>0.25</u>	<u>0.08</u>
<u>Red-bellied Woodpecker</u>	<u>0.25</u>	<u>0.17</u>	<u>0.25</u>
<u>Downy Woodpecker</u>	<u>0.23</u>	<u>0.42</u>	<u>0.42</u>
<u>Hairy Woodpecker</u>	<u>0.08</u>	<u>0.33</u>	<u>0.33</u>
<u>Northern Flicker</u>	<u>0.08</u>	<u>0.25</u>	<u>0</u>

<u>Pileated Woodpecker</u>	<u>0.23</u>	<u>0.5</u>	<u>0.5</u>
<u>Eastern wood-Pewee</u>	<u>0.38</u>	<u>0.33</u>	<u>0.42</u>
<u>Acadian Flycatcher</u>	<u>0.77</u>	<u>0.75</u>	<u>0.9</u>
<u>Eastern Phoebe</u>	<u>0.23</u>	<u>0.25</u>	<u>0.15</u>
<u>Great-crested Flycatcher</u>	<u>0.08</u>	<u>0.25</u>	<u>0.10</u>
<u>Northern Rough-winged Swallow</u>	<u>0</u>	<u>0.08</u>	<u>0</u>
<u>Blue Jay</u>	<u>0.54</u>	<u>0.42</u>	<u>0.33</u>
<u>American Crow</u>	<u>1.38</u>	<u>0.33</u>	<u>1.0</u>
<u>Common Raven</u>	<u>0.15</u>	<u>0</u>	<u>0</u>
<u>Carolina Chickadee</u>	<u>0.38</u>	<u>0.33</u>	<u>0.42</u>
<u>Table 1. Continued.</u>			
<u>Species</u>	<u>Indian Creek¹</u>	<u>Little Bluestone²</u>	<u>Mountain Creek³</u>
<u>Tufted Titmouse</u>	<u>0.38</u>	<u>0.67</u>	<u>0.25</u>
<u>White-breasted Nuthatch</u>	<u>0.23</u>	<u>0.33</u>	<u>0.23</u>
<u>Carolina Wren</u>	<u>0.15</u>	<u>0.75</u>	<u>0.42</u>
<u>House Wren</u>	<u>0</u>	<u>0.08</u>	<u>0</u>
<u>Blue-gray Gnatcatcher</u>	<u>0.23</u>	<u>0.42</u>	<u>0.31</u>
<u>Wood Thrush</u>	<u>1.38</u>	<u>0.75</u>	<u>0.85</u>
<u>American Robin</u>	<u>0.08</u>	<u>0.08</u>	<u>0.25</u>
<u>Brown Thrasher</u>	<u>0</u>	<u>0.17</u>	<u>0</u>
<u>Gray Catbird</u>	<u>0</u>	<u>0.08</u>	<u>0</u>
<u>Cedar Waxwing</u>	<u>0</u>	<u>0.08</u>	<u>0</u>
<u>White-eyed Vireo</u>	<u>0</u>	<u>0.17</u>	<u>0</u>
<u>Blue-headed Vireo</u>	<u>0.31</u>	<u>0.17</u>	<u>0.08</u>
<u>Yellow-throated Vireo</u>	<u>0.15</u>	<u>0.17</u>	<u>0.08</u>
<u>Red-eyed Vireo</u>	<u>3.08</u>	<u>1.92</u>	<u>1.0</u>
<u>Blue-winged Warbler</u>	<u>0</u>	<u>0.17</u>	<u>0</u>
<u>Northern Parula</u>	<u>0.31</u>	<u>0.67</u>	<u>0.33</u>
<u>Chestnut-sided Warbler</u>	<u>0</u>	<u>0.17</u>	<u>0</u>

<u>Black-throated Green Warbler</u>	<u>0.69</u>	<u>0</u>	<u>0.25</u>
<u>Yellow-throated Warbler</u>	<u>0.15</u>	<u>0.25</u>	<u>0.5</u>
<u>Cerulean Warbler</u>	<u>0.15</u>	<u>0.25</u>	<u>0.25</u>
<u>Black-and-white Warbler</u>	<u>0.54</u>	<u>0.42</u>	<u>0.75</u>

Table 1. Continued.

<u>Species</u>	<u>Indian Creek¹</u>	<u>Little Bluestone²</u>	<u>Mountain Creek³</u>
<u>American Redstart</u>	<u>0.08</u>	<u>0.67</u>	<u>0.25</u>
<u>Worm-eating Warbler</u>	<u>0.38</u>	<u>0.33</u>	<u>0.67</u>
<u>Ovenbird</u>	<u>1.38</u>	<u>0.42</u>	<u>1.5</u>
<u>Louisiana Waterthrush</u>	<u>0</u>	<u>0.25</u>	<u>0.25</u>
<u>Common Yellowthroat</u>	<u>0</u>	<u>0.25</u>	<u>0</u>
<u>Kentucky Warbler</u>	<u>0</u>	<u>0.67</u>	<u>0.17</u>
<u>Hooded Warbler</u>	<u>0.08</u>	<u>0.42</u>	<u>0.42</u>
<u>Scarlet Tanager</u>	<u>1.31</u>	<u>1.08</u>	<u>1.4</u>
<u>Northern Cardinal</u>	<u>0.31</u>	<u>0.5</u>	<u>0.15</u>
<u>Indigo Bunting</u>	<u>0.23</u>	<u>0.58</u>	<u>0.17</u>
<u>Eastern Towhee</u>	<u>0.15</u>	<u>0.75</u>	<u>0.15</u>
<u>Chipping Sparrow</u>	<u>0</u>	<u>0.08</u>	<u>0</u>
<u>Song Sparrow</u>	<u>0</u>	<u>0.17</u>	<u>0</u>
<u>Brown-headed Cowbird</u>	<u>0.17</u>	<u>0.17</u>	<u>0</u>
<u>Northern Oriole</u>	<u>0.08</u>	<u>0.25</u>	<u>0.08</u>
<u>American Goldfinch</u>	<u>0.31</u>	<u>0.42</u>	<u>0.25</u>

¹ Thirteen points extending along Indian Creek from Indian Ridge to border of Mercer and Summers counties, ² twelve points extending from gate at Bluestone State Park Meador camping area to pitfall 8, ³ nine points along Mountain Creek and Bluestone River.

Table 2. Species observed feeding fledglings during the study.

<u>Species</u>	<u>Date</u>	<u>Indian Creek</u>	<u>Little Bluestone</u>	<u>Mountain Creek</u>
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<u>American Crow</u>	<u>16 June</u> <u>24 June</u> <u>1 July</u>	<u>✱</u>	<u>✱</u> <u>✱</u>	
<u>Northern Parula</u>	<u>16 June</u>	<u>✱</u>		
<u>Scarlet Tanager</u>	<u>16 June</u>	<u>✱</u>		
<u>Worm-eating Warbler¹</u>	<u>24 June</u>		<u>✱</u>	
<u>Black-and-white Warbler</u>	<u>24 June</u>		<u>✱</u>	
<u>American Redstart</u>	<u>24 June</u>		<u>✱</u>	
<u>Carolina Chickadee</u>	<u>24 June</u>		<u>✱</u>	
<u>Ovenbird</u>	<u>26 June</u>			<u>✱</u>
<u>Hooded Warbler</u>	<u>6 July</u>			<u>✱</u>
¹ Feeding young cowbird.				

Table 3. Raptor survey in the Bluestone National Scenic River during June 1999.

<u>Species</u>	<u>SITE</u>		
	<u>Indian Creek</u>	<u>Little Bluestone</u>	<u>Mountain Creek</u>
<u>Osprey</u>	<u>0</u>	<u>1</u>	<u>0</u>
<u>Sharp-shinned Hawk</u>	<u>2</u>	<u>5</u>	<u>2</u>
<u>Cooper's Hawk</u>	<u>2</u>	<u>1</u>	<u>1</u>
<u>Red-tailed Hawk</u>	<u>0</u>	<u>2</u>	<u>2</u>
<u>Red-shouldered Hawk</u>	<u>1</u>	<u>1</u>	<u>3</u>
<u>Broad-winged Hawk</u>	<u>3</u>	<u>2</u>	<u>1</u>
<u>Screech Owl</u>	<u>4</u>	<u>8</u>	<u>2</u>
<u>Great-Horned Owl</u>	<u>2</u>	<u>1</u>	<u>0</u>
<u>Barred Owl</u>	<u>3</u>	<u>2</u>	<u>3</u>

Table 4. Highest waterfowl count (per species) along the Bluestone River between Meador camp ground and the Little Bluestone River. Data compiled from October 5 - December 15.

<u>Pied-billed Grebe</u>	<u>9</u>
<u>Double-crested Cormorant</u>	<u>4</u>
<u>Canada Goose</u>	<u>112</u>
<u>Am. Black Duck</u>	<u>9</u>
<u>Gadwall</u>	<u>6</u>
<u>Mallard</u>	<u>44</u>
<u>Pintail</u>	<u>1</u>
<u>Wood Duck</u>	<u>16</u>
<u>Green-winged Teal</u>	<u>5</u>
<u>Redhead</u>	<u>2</u>
<u>Lesser Scaup</u>	<u>36</u>
<u>Bufflehead</u>	<u>11</u>
<u>Ruddy Duck</u>	<u>3</u>
<u>Common Merganser</u>	<u>6</u>
<u>Hooded Merganser</u>	<u>15</u>
<u>Coot</u>	<u>8</u>

Appendix I. Birds observed along Meador camp ground on 8 April 1999.

Canada Goose	10
Killdeer	2
Belted Kingfisher	1
Pileated Woodpecker	1
Carolina Chickadee	10
White-breasted Nuthatch	3
Tufted Titmouse	5
Carolina Wren	6
Blue-gray Gnatcatcher	4
Yellow-rumped Warbler	1
Brown Thrasher	3
Northern Cardinal	10
Eastern Towhee	15
Chipping Sparrow	4
Field Sparrow	1
Song Sparrow	16
White-throated Sparrow	3
Dark-eyed Junco	25
Brown-headed Cowbird	2
American Goldfinch	2

Appendix II. Days of Counts. Raw data are available on diskette or point count field sheets via inquiry. Vegetation data are also available for future inquiry and analyses, and plants were counted by the Co-PI and other members of the Southern WV Bird Research staff, such as Allen Waldron of the WV Division of Forestry.

<u>June 11</u>	<u>Little Bluestone</u>
<u>June 13</u>	<u>Mountain Creek</u>
<u>June 14</u>	<u>Little Bluestone</u>
<u>June 16</u>	<u>Indian Creek</u>
<u>June 24</u>	<u>Little Bluestone</u>
<u>June 26</u>	<u>Mountain Creek</u>
<u>June 27</u>	<u>Indian Creek</u>
<u>June 28</u>	<u>Little Bluestone</u>
<u>June 30</u>	<u>Indian Creek</u>
<u>July 1</u>	<u>Little Bluestone</u>
<u>July 5</u>	<u>Little Bluestone</u>
<u>July 6</u>	<u>Mountain Creek</u>
<u>July 11</u>	<u>Indian Creek</u>
<u>July 15</u>	<u>Little Bluestone</u>

Waterfowl Census

October 5

October 14

November 18

December 10

December 15