

The Raven

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The Virginia Society of Ornithology, Inc. exists to encourage the systematic study of birds in Virginia, to stimulate interest in birds, and to assist the conservation of wildlife and other natural resources. All persons interested in those objectives are welcome as members. Present membership includes every level of interest, from professional scientific ornithologists to enthusiastic amateurs.

Activities undertaken by the Society include the following:

1. An annual meeting (usually in the spring), held in a different part of the state each year, featuring talks on ornithological subjects and field trips to nearby areas.
2. Other forays or field trips lasting a day or more and scheduled throughout the year so as to include all seasons and to cover the major physiographic regions of the state.
3. A journal, *The Raven*, published twice yearly, containing articles relevant to Virginia ornithology as well as news of the activities of the Society and its chapters.
4. A newsletter, the *VSO Newsletter*, published quarterly, containing current news items of interest to members and information about upcoming events and pertinent conservation issues.
5. Study projects (nesting studies, winter bird population surveys, etc.) aimed at making genuine contributions to ornithological knowledge.

In addition, some local chapters of the Society conduct their own programs of meetings, field trips and other projects.

Those wishing to participate in any of the above activities, or to cooperate in advancing the objectives of the Society, are cordially invited to join and should contact the Membership Secretary. Annual dues are \$20.00 for active members, \$35.00 for sustaining members, \$60.00 or more for contributing members, \$500.00 for life members, and \$25.00 for family members.

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Editor
Wesley M. Brown



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TABLE OF CONTENTS

VIRGINIA CHRISTMAS BIRD COUNTS: 2013-2014 SEASON

Teta Kain 3

FIRST CONFIRMED NESTING OF THE NORTHERN GOSHAWK (*Accipiter gentilis*) IN VIRGINIA, WITH A REVIEW OF BREEDING SEASON RECORDS FROM THE CENTRAL AND SOUTHERN APPALACHIANS

Ryan S. Mays..... 24

PATTERNS OF BIRD COMMUNITY STRUCTURE AT MANASSAS NATIONAL BATTLEFIELD PARK, VIRGINIA

V. J. Zacharias and Bryan Gorsira 33

ABSTRACTS OF SCIENTIFIC PAPERS: 2014 VSO ANNUAL MEETING, CHESAPEAKE VA:

Conspecific Attraction of a Declining Songbird, the Golden-winged Warbler (*Vermivora chrysoptera*), in a Fragmented Landscape

Dan Albrechet-Mallinger and Leslie P. Bulluck..... 40

The Occurrence and Consequences of Conspecific Brood Parasitism in the Prothonotary Warbler (*Protonotaria citrea*)

Anna M. Tucker, Lesley Bulluck, Rodney Dyer, and Sarah Huber..... 40

Bird Habitat Use within Home Ranges: Implications for Species Persistence in Human-Modified Landscapes

Vitek Jirinec..... 40

Temporal Variation in Breeding Success and Corticosterone Levels in Eastern Bluebirds (*Sialia sialis*)

Emily Clark*, Judith A. Guinan, Jason E. Davis 41

Fluctuating Asymmetry as a Measure of Developmental Stress in Mercury-Dosed Zebra Finches

Capwell Taylor, Janice Y. Park, Julia B. Kihm, John P. Swaddle, Daniel A. Cristol 41

ANNUAL REPORT OF THE VIRGINIA AVIAN RECORDS COMMITTEE

Robert Ake and Wendy Ealding 42

VIRGINIA CHRISTMAS BIRD COUNTS: 2013-2014 SEASON

TETA KAIN

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For the third year in a row, a total of 52 Christmas Bird Counts were held in Virginia. This remarkable consistency has been a mainstay of the count season for many years and goes a long way in helping to recognize trends and changes in the state's winter bird populations.

The shift toward dramatic climate change around the nation for the past several years has created changes in habitats and weather patterns in some areas of Virginia that will certainly affect the distribution and numbers of various species in years to come. Examples would be the drastic shoreline alteration of Virginia's Eastern Shore barrier islands and the inundation of marshes and estuaries of the Chesapeake Bay. A series of harsher winters in the Piedmont and Mountains & Valleys regions will certainly affect the occurrence of species wintering in those areas in coming years.

But the counts roll on and each year brings both happy and worrisome surprises. The season of 2013-14 was no exception, and one of the best birding events for birders and non-birders alike was the appearance of majestic Snowy Owls (*Bubo scandiacus*) all around the state. Six counts turned up eight individuals, quadrupling the previous state all-time high record set in 2004. At Chincoteague four individuals were known to be on the refuge during count week, but only two showed themselves on count day. Cape Charles, Nansemond River, Washington's Birthplace, Rockingham County, and Waynesboro also recorded this species.

Even though it has never been recorded on a Virginia Christmas count and was seen only during count week, one of the best finds of the season was a Purple Gallinule (*Porphyrio martinicus*) on the Little Creek count. The bird crashed into a window in Virginia Beach a day before the count, was rescued, and taken to a rehab center, where it appeared to be doing well and was expected to survive.

Another great discovery of the season was tucked away in the Walkerton circle, one of the lesser known and more sparsely populated count circles in the eastern part of the state. Situated northeast of Richmond and spanning King William and King & Queen counties, the state's third Xmas count Vermilion Flycatcher (*Pyrocephalus rubinus*) was found there on count day. The bird obligingly posed for several superb photographs.

The Pectoral Sandpiper (*Calidris melanotos*) at Hopewell was a first for that count and the only one occurring on any Virginia count since 1984, although a count-week bird was reported at Cape Charles in 1993.

Other notable firsts around the state were: a Bald Eagle (*Haliaeetus leucocephalus*) at Chatham; a Rough-legged Hawk (*Buteo lagopus*) at Breaks Interstate Park; and 14 American Pipits (*Anthus rubescens*) on the Buchanan County count. Unfortunately no details were received about either sighting, but Double-crested Cormorants (*Phalacrocorax auritus*) were at both Warren and Roanoke. A Lapland Longspur (*Calcarius lapponicus*) appeared at Darlington Heights; one Common Merganser (*Mergus merganser*) was at Blackford; and a Palm Warbler (*Setophaga palmarum*) showed up for the first time at Banister River.

A Louisiana Waterthrush (*Parkesia motacilla*) was again at Waynesboro. This was not the first record for that count, but an excellent photograph left no doubt as to its identity. That Western Tanager (*Piranga ludoviciana*) was back at Williamsburg again, for the third year in a row. Another Western Tanager was photographed at Cape Charles, a first for that count. For the fourth year in a row, a Dickcissel (*Spiza americana*) appeared on a Virginia count, this year at Waynesboro. One Common Redpoll (*Acanthis flammea*) was discovered at Cape Charles, a first for there in 10 years.

All-time high counts abounded and one of the most significant elevations was the numbers of Wild Turkeys (*Meleagris gallopavo*) that appeared everywhere. A full 16 counts broke peak-count records. Lynchburg led the pack with a count of an unprecedented 281 birds, followed by 194 at Nokesville, 181 at Glade Spring, 160 at Warren, 158 at Central Loudoun, and 119 and 117 at Northern Shenandoah Valley and Calmes Neck respectively. Another remarkable high was 181 Fish Crows (*Corvus ossifragus*) at Lexington. The previous record was a mere 25 in 2011.

Another total worth noting was 216 Bald Eagles at Brooke, up from 182 in 2010, thanks to the excellent dining accommodations afforded the birds at the King George landfill. That number was, by far, the highest on any count this year. Red-shouldered Hawks (*Buteo lineatus*) continue to increase in numbers around the state. This year seven different counts recorded all-time highs. All those numbers added up to comprise the highest state total ever of 867 individuals. The previous high was set just last year, with 760 found on all but three counts.

Canvasback (*Aythya valisineria*) numbers were considerably higher than those of the past four years. Overall, a low total compared to numbers in the 1990s. Nokesville birders enjoyed a large increase of Ring-necked Ducks (*Aythya collaris*), 148, as compared to the previous all-time high of 61 that was recorded back in the 1980s.

Numbers of Red-throated Loons (*Gavia stellata*) off the bridge-tunnel on the Chesapeake Bay count spiked to over 2,600 birds passing by the islands. Another species that was counted in high numbers was Double-crested Cormorant (*Phalacrocorax auritus*) (1,100), far above numbers from any previous count there. The state total mushroomed to 23,980 individuals, exceeding the previous record of 18,000 in 2002. (Eastern) Willets (*Tringa semipalmata semipalmata*) (784) and (American) Whimbrels (*Numenius phaeopus hudsonicus*) (17) both topped previous highs at Cape Charles. Chincoteague had 32 Lesser Black-backed Gulls (*Larus fuscus graellsii*); Little Creek recorded 5 Dovekies (*Alle alle*), the most ever anywhere in the state.

Nansemond River had 30 Brown Thrashers (*Toxostoma rufum*); Mathews County soared from a previous all-time high of 33 American Pipits in 1993 to 404 this year. Another big jump was 160 Horned Larks (*Eremophila alpestris*) in the Mount Rogers-Whitetop circle, up from 33 in 2012. Hermit Thrushes (*Catharus guttatus*) were in abundance at Walkerton. The 126 individuals were way up from the record 45 set in 2008.

A couple of south central Virginia counts saw record numbers of Chipping Sparrows (*Spizella passerina*), 122 at Darlington Heights, up from 57 in 2008, and Chatham birders found 68, many times more than any previous total on that count.

The three Painted Buntings (*Passerina ciris*) found at Back Bay, Little Creek and Newport News comprised an all-time state high. The individuals at Newport News and Back Bay were new for those counts, but an individual at Nansemond River was seen only during count week.

On the other hand, a new low was realized when only four Loggerhead Shrikes (*Lanius ludovicianus*) in the entire region were recorded, at Blackford (3) and Bristol (1). Long-time reliable hangouts of this species - Central Loudoun County, Northern Shenandoah Valley, Mt. Rogers-Whitetop, and Glade Spring - all came up empty this year. Three other circles - Calmes Neck, Tazewell, and Blacksburg - had been reporting shrikes almost every year, but none have been spotted on those counts for three or more years.

Yellow-rumped (Myrtle) Warbler (*Setophaga coronata coronata*) numbers continue to fall at Chincoteague, mostly due to great changes along the shores of the refuge. Great storms have annihilated the miles of brushy habitat behind the dunes, which the birds traditionally prefer; consequently, winter populations have plummeted from yearly totals in the thousands to 233 birds there this year. Another significant drop was Blue Jays (*Cyanocitta cristata*) at Fort Belvoir. Only 91 Blue Jays were found at Fincastle. Generally occurring in triple digits, every few years their numbers drop inexplicably for a year, then climb back up to normal levels for another seven to 10 years. One of the

saddest declines of all is that of the Northern Bobwhite (*Colinus virginianus*) which hit an all-time modern-day low of 68 birds. Recorded on only eight counts this year, the four individuals at Northern Shenandoah Valley were the only bobwhites recorded in the western part of the state.

The single Brewer's Blackbird (*Euphagus cyanocephalus*) of the year was at Washington's Birthplace. Anywhere from one to ten are usually found yearly, but they occurred in greater numbers back in the early 1990s with a yearly average of about 15 individuals over an eight-year span. The all-time record state high for this species was 36 in 2002. The 374 Rusty Blackbirds (*Euphagus carolinus*) was the lowest number of that species in five years. Common Grackles (*Quiscalus quiscula*) were not in abundance either. Just a few over 18,000 comprised the state total, the lowest in 60 years.

A measly 407 Boat-tailed Grackles (*Quiscalus major*) were found on the Eastern Shore and western Bay counts, continuing the trend of noticeable decline over the past 10 years. Astonishing was the total absence of this species at Back Bay, the first miss for that count since 1969. Over the period from 1970 through 2012 the average has been around 265 birds each year.

Just 42 Purple Finches (*Haemorhous purpureus*) seen on 17 of the 52 counts comprised the lowest state total of that species since 1956, when only 29 were recorded on eight of the 21 counts held that year. That's a far cry from the triple and quadruple numbers racked up almost every year in Virginia.

For the second year in a row, Baltimore Orioles (*Icterus galbula*) were very scarce, with only three found at Williamsburg and a count week bird discovered at Nansemond River. Last year only one was recorded at Williamsburg, where it has been spotted each year with great regularity. For the five years previous to that, numbers were in the low teens. The low count of 39 Pine Siskins (*Spinus pinus*) around the state was somewhat expected with the erratic number fluctuation of this species from year to year.

Two species - Greater Scaup (*Podiceps auritus*) and Horned Grebe (*Aythya marila*) - displayed very unusual distribution patterns this year. Greater Scaup usually appears in modest numbers, mostly on a handful of Eastern Shore and Western Bay counts. This year, however, it was a surprise to see single individuals pop up in some rather unexpected places, namely Mathews County, Williamsburg, Hopewell, Lake Anna, and Shenandoah-Luray. But even with a wider spread than usual, a state-wide total of only 46 individuals was recorded, down significantly from the average of 375/year over the past 20 years. Horned Grebes occurred in a somewhat similar pattern, with one to three birds showing up in such odd places as Chesapeake Bay, Central Loudoun County, The Plains, Manassas-

Bull Run, Chancellorsville, Charlottesville, Darlington Heights, Lynchburg, Augusta County, and Blacksburg. Unlike Greater Scaup, however, overall numbers were considerably higher than in the previous seven years.

A note of historical interest this year involves the tiny settlement of Beulahville in northern King & Queen County. Elizabeth Hawes Ryland conducted the third Christmas Bird count ever held in Virginia on her family farm, located just a couple of miles north of the present-day Walkerton count circle from 1910 through 1912. Ryland's last report to the National Audubon Society in 1912 included 20 (Red) Fox Sparrows (*Passerella iliaca*). That number held strong for 111 years as the high count for that area until this year, when birders found 54 Fox Sparrows in the Walkerton circle. That was one of the very last high count records of those very early years to topple.

Data from the counts are tabulated in three Tables on the following pages. In all Tables, the counts ("Count Circles") are numbered in order from 1 to 52, beginning with Eastern Shore counts and proceeding in a roughly east-to-west and north-to-south configuration. Eastern Shore Count Circles are numbered 1-5, Coastal Plain Circles 6-17, Piedmont Circles 18-31, and Mountains and Valleys Circles 32-52. Table 1 lists the number of individuals of each species seen; Table 2 lists collection and meteorological data; Table 3 lists count compilers and sponsors.

The abbreviations used in the three tables are as follows:

a = adult
 Blvd = Boulevard
 CAL = Calm
 CBC = Christmas Bird Count(s)
 CLD = Cloudy
 CLR = Clear
 Cmdr = Commander
 Co = County
 CTC = Clear to Cloudy
 CW = Count week
 Dec = December
 E = East
 FOG = Foggy
 HLN - Heavy to light to no rain
 HLR = Heavy to light rain
 HVR = Heavy rain
 I or i = immature
 Jan = January
 Jct = Junction
 LGR = Light rain
 LNR = Light to no rain
 LNS = Light to no snow
 LSN = Light snow
 LSR = Light snow and rain
 MCD = Mostly cloudy

MCR = Mostly clear
 mi = Mile(s)
 MPF = Moving water partly frozen
 mph = Miles per hour
 Mt = Mount or Mountain
 MWO = Moving water open
 N = North
 NP = National Park
 NR or nr = Not recorded
 NRV = New River Valley
 NW = Northwest
 NWR = National Wildlife Refuge
 OVC = Overcast
 PCD = Partly cloudy
 PCR = Partly clear
 Rd = Road
 Rt(s) = Route(s)
 S = South
 SE = Southeast
 SFZ = Still water frozen
 Sp or sp = species
 SPF = Still water partly frozen
 SPO = Still water partly open
 SW = Southwest
 TN = Tennessee
 U or UNK = Unknown
 V or VAR = Variable
 VA = Virginia
 W = West
 WMA = Wildlife Management Area
 WNW = West northwest
 WNR = Water conditions not recorded
 WOP = Water open
 WPO = Water partly open
 WSW = West southwest

Table 1. Number of Individuals of Each Species Seen (page 1 of 15)

SPECIES COUNT CIRCLE	Greater White-fronted Goose	Snow Goose (white form)	Snow Goose (blue form)	Ross's Goose	Brant	Cackling Goose	Canada Goose	Mute Swan	Tundra Swan	Wood Duck	Gadwall	Eurasian Wigeon	American Wigeon	Black Duck
1. Chincoteague	...	10,073	22	..	690	..	1,663	..	226	...	182	..	153	1,165
2. Wachapreague	...	9,654	..	..	20	..	3,199	..	9	2	61	..	8	267
3. Nassawaddox	2,000	..	1,915	..	100	2	2	..	..	249
4. Cape Charles	1	10,000	30	..	1,000	1	3,000	2	150	17	662	..	289	348
5. Chesapeake Bay
6. Little Creek	...	4	..	..	..	..	797	..	57	35	138	1	301	31
7. Back Bay	...	4,143	202	1	..	..	816	..	831	..	760	..	92	202
8. Nansemond River	1,296	..	..	10	241	1	100	52
9. Dismal Swamp	...	40	..	..	..	..	284	..	3	41	20	..	4	40
10. Newport News	1	..	1,042	..	54	3	184	..	93	88
11. Mathews County	...	51	..	..	..	..	1,465	..	241	..	..	..	..	10
12. Williamsburg	1	1	3,793	2	43	20	252	..	14	9
13. Hopewell	...	200	2,300	4	..	1	21,598	..	2	39	341	..	59	35
14. Walkerton	2	12,494	..	136	52	145	..	9	193
15. Washingtons Birthplace	14,081	..	60	5	99	..	10	378
16. Brooke	...	26	..	..	..	..	1,446	..	746	2	3,411	..	23	146
17. Fort Belvoir	...	CW	..	..	..	..	10,547	..	671	75	1,682	..	250	1,455
18. Central Loudoun County	3,393	..	1	..	98	..	12	27
19. The Plains	8,083	1	CW	..	68	..	51	37
20. Manassas-Bull Run	1	5,658	..	..	..	17	..	..	9
21. Nokesville	717	1	4	..	27	..	..	23
22. Chancellorsville	762	11	..	4	3	..	..	..
23. Lake Anna	236	..	..	2	..	..	..	..
24. Gordonsville	899	..	..	..	..	..	..	..
25. Charlottesville	674	..	..	2	..	..	..	28
26. Warren	811	..	..	..	12	..	..	11
27. Darlington Heights	260	..	..	6	..	..	..	..
28. Banister River	202	..	..	12	..	..	..	..
29. Lynchburg	536	..	..	2	12	..	..	5
30. Chatham	70	..	..	..	..	..	..	..
31. Danville	176	..	..	..	..	..	..	..
32. Calmes Neck	3	4,610	..	..	4	..	..	..	51
33. N. Shenandoah Valley	1,072	..	1	2	22	..	6	63
34. Shenandoah NP-Luray	328	..	..	4	3	..	2	1
35. Big Flat Mountain
36. Rockingham County	210	3	..	2	6	..	1	4
37. Augusta County	679	..	4	..	82	..	CW	2
38. Waynesboro	1	1	..	..	..	..	1,736	..	1	..	39	..	11	4
39. Lexington	236	..	..	2	30	..	1	11
40. Peaks of Otter
41. Fincastle	253	..	..	..	18	..	..	3
42. Roanoke	138	..	..	4	29	..	..	4
43. Blacksburg	567	..	..	..	2	..	9	12
44. Giles County	134	..	..	2	..	..	..	3
45. Tazewell	65	..	..	..	2	..	..	..
46. Mount Rogers-Whitetop	80	..	..	..	..	..	..	..
47. Glade Spring	...	1	..	..	..	..	258	..	..	3	21	..	1	8
48. Blackford	158	..	..	1	..	..	..	6
49. Bristol	1	805	..	..	..	30	..	19	4
50. Buchanan County
51. Breaks Interstate Park
52. Wise County
Totals	2	34,193	2,554	5	3,712	10	113,242	20	3,340	355	8,701	2	1,518	4,984

Table 1. Number of Individuals of Each Species Seen (page 2 of 15)

SPECIES COUNT CIRCLE	American Black Duck X Mallard	Mallard	Black Duck/ Mallard sp.	Blue-winged Teal	Northern Shoveler	Northern Pintail	American Green -winged Teal	Canvasback	Redhead	Ring-necked Duck	Greater Scaup	Lesser Scaup	scaup sp.	Harlequin Duck
1. Chincoteague	..	710	1	..	228	128	397	..	3	..	1	..	..	..
2. Wachapreague	..	175	..	..	..	4	212	..	..	..	..	..	..	..
3. Nassawaddox	..	73	..	..	..	..	2	..	..	2	..	..	..	..
4. Cape Charles	1	301	..	..	13	5	42	..	14	129	..	1	..	..
5. Chesapeake Bay	28	..	..
6. Little Creek	..	512	..	..	144	3	27	..	..	102	..	11	..	..
7. Back Bay	..	176	..	..	8	10	24	CW	CW	1	..	CW	..	1
8. Nansemond River	..	158	..	..	286	41	33	2,628	41	196	3	106	12	..
9. Dismal Swamp	..	120	..	..	..	..	4	..	2	20	..	20	..	..
10. Newport News	..	756	..	..	..	..	31	..	4	143	5	76	15	..
11. Mathews County	..	80	..	..	..	..	..	..	6	4	1	..	..	..
12. Williamsburg	..	304	..	..	..	4	26	458	7	653	1	17	281	..
13. Hopewell	..	794	..	..	101	8	109	6	4	791	1	60	..	..
14. Walkerton	1	906	..	..	7	1,230	92	1	7	498	..	20	12	..
15. Washingtons Birthplace	..	899	..	..	2	..	22	..	..	18	..	370	1,000	..
16. Brooke	..	652	..	..	9	..	19	51	12	375	2	23	..	..
17. Fort Belvoir	..	3,041	..	..	375	266	138	1,510	848	1,159	30	21,016	5,033	..
18. Central Loudoun County	..	300	..	..	9	..	..	8	..	33	..	10	..	..
19. The Plains	..	211	..	..	CW	CW	CW	7	16	1,233	..	..	..	..
20. Manassas-Bull Run	..	204	..	..	..	..	9	..	..	8	..	1	..	..
21. Nokesville	..	536	..	..	..	..	..	..	..	148	..	..	..	..
22. Chancellorsville	..	99	..	..	..	..	3	..	9	64	..	25	..	..
23. Lake Anna	..	29	..	..	..	..	..	..	..	1	1	..	..	..
24. Gordonsville	12	..	..	..	..
25. Charlottesville	..	245	..	1	..	..	..	..	..	..	..	..	..	..
26. Warren	..	21	..	..	..	..	10	..	..	42	..	..	..	..
27. Darlington Heights	3	..	..	..	..
28. Banister River	..	19	..	..	..	..	..	..	..	100	..	4	..	..
29. Lynchburg	..	299	..	..	..	..	..	..	..	53	..	..	..	..
30. Chatham	..	9	..	..	..	..	..	..	..	..	..	..	..	..
31. Danville	..	9	..	..	..	..	..	..	..	52	..	..	..	..
32. Calmes Neck	..	111	..	..	..	..	6	..	..	132	..	..	..	..
33. N. Shenandoah Valley	..	306	..	..	2	3	13	..	..	32	..	..	..	..
34. Shenandoah NP-Luray	..	221	..	..	..	..	8	..	..	5	1	..	..	..
35. Big Flat Mountain
36. Rockingham County	..	370	..	..	2	1	..	..	6	..	..	..	..	..
37. Augusta County	..	296	..	..	12	CW	12	..	..	CW	..	CW	..	..
38. Waynesboro	..	75	..	..	..	..	15	..	5	15	..	18	..	..
39. Lexington	..	46	..	..	..	..	..	..	..	..	..	..	..	..
40. Peaks of Otter
41. Fincastle	..	70	..	..	..	3	2	..	..	46	..	..	..	..
42. Roanoke	..	208	..	..	1	..	4	..	..	7	..	..	..	..
43. Blacksburg	..	555	..	..	..	7	1	..	..	..	..	..	..	..
44. Giles County	..	63	..	..	..	..	..	..	..	..	..	..	..	..
45. Tazewell	..	50	..	..	..	..	..	..	..	..	..	..	..	..
46. Mount Rogers-Whitetop	..	14	..	..	..	..	..	..	..	..	..	..	..	..
47. Glade Spring	..	328	..	..	..	2	..	..	..	2	..	..	..	..
48. Blackford	..	186	..	..	..	..	CW	..	..	..	..	..	..	..
49. Bristol	..	363	..	..	..	2	2	..	11	26	..	..	..	..
50. Buchanan County	..	9	..	..	..	..	..	..	..	..	..	..	..	..
51. Breaks Interstate Park	..	4	..	..	..	..	..	..	..	..	..	..	..	..
52. Wise County	..	34	..	..	..	..	..	..	..	..	..	..	..	..
Totals	2	14,947	1	1	1,199	1,717	1,263	4,669	995	6,105	46	21,806	6,353	1

Table 1. Number of Individuals of Each Species Seen (page 3 of 15)

SPECIES COUNT CIRCLE	Surf Scoter	White-winged Scoter	Black Scoter	scoter sp.	Long-tailed Duck	Bufflehead	Common Goldeneye	Hooded Merganser	Common Merganser	Red-breasted Merganser	Ruddy Duck	duck sp.	Ring-necked Pheasant	Ruffed Grouse	Wild Turkey
1. Chincoteague	80	3	711	300	10	954	3	135	1	120	35	4	..	..	90
2. Wachapreague	14	..	..	40	26	902	5	206	..	29	80	..	..	..	11
3. Nassawaddox	18	..	2	..	22	501	7	62	..	63	122	..	..	..	..
4. Cape Charles	526	19	172	32	43	1,804	12	231	1	243	192	..	..	..	3
5. Chesapeake Bay	850	18	450	500	29	14	..	..	..	9	..	..	..	..	..
6. Little Creek	134	2	71	..	10	696	..	513	..	285	179	..	..	..	..
7. Back Bay	18	..	40	25	2	70	..	61	..	33	107	..	..	..	..
8. Nansemond River	246	..	2	..	..	1,337	1	237	..	359	2,788	4	..	..	68
9. Dismal Swamp	..	..	..	..	..	5	..	40	..	..	..	45	..	..	1
10. Newport News	126	29	155	..	14	734	9	368	1	30	292	..	..	..	..
11. Mathews County	717	..	33	..	31	1,116	35	33	..	88	1,295	..	..	..	48
12. Williamsburg	..	..	..	..	..	191	1	214	..	18	5,128	..	..	..	10
13. Hopewell	..	..	..	..	..	530	1	201	10	..	291	425	..	..	9
14. Walkerton	..	..	..	..	..	415	..	85	7	..	206	..	..	..	27
15. Washingtons Birthplace	475	..	2	..	4	216	104	49	27	84	392	..	..	..	38
16. Brooke	..	..	..	..	..	254	8	199	10	15	1,745	..	..	..	9
17. Fort Belvoir	..	..	..	..	1	547	9	370	461	48	1,021	..	..	..	46
18. Central Loudoun County	..	..	..	..	..	49	..	44	184	2	2	..	..	..	158
19. The Plains	..	..	..	..	..	91	1	153	44	..	18	..	..	..	69
20. Manassas-Bull Run	..	..	..	..	..	1	..	69	245	..	3	..	..	..	5
21. Nokesville	..	..	..	..	..	7	..	13	..	..	60	..	..	..	194
22. Chancellorsville	..	..	..	..	..	79	..	30	29	..	55	..	..	..	20
23. Lake Anna	..	..	..	..	..	46	..	21	8	..	28	..	..	..	31
24. Gordonsville	..	..	..	..	..	23	..	31	..	..	..	..	..	..	69
25. Charlottesville	..	..	..	..	..	5	..	10	..	..	..	..	..	..	46
26. Warren	..	..	..	..	..	..	..	14	..	..	..	..	1	..	160
27. Darlington Heights	..	..	..	..	..	7	..	11	..	..	..	..	..	..	34
28. Banister River	..	..	..	..	..	13	..	26	1	..	1	..	..	..	14
29. Lynchburg	..	..	..	..	..	2	..	34	3	..	29	..	..	..	281
30. Chatham	..	..	..	..	..	..	..	8	..	..	..	..	..	..	CW
31. Danville	..	..	..	..	..	..	..	14	..	..	..	4	..	..	..
32. Calmes Neck	..	..	..	..	1	10	2	20	127	2	2	..	..	..	117
33. N. Shenandoah Valley	..	..	..	..	..	4	1	27	19	..	1	..	..	..	119
34. Shenandoah NP-Luray	..	..	..	..	..	..	..	..	1	..	13	..	..	1	32
35. Big Flat Mountain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
36. Rockingham County	..	..	..	..	..	5	..	..	..	1	..	..	..	..	..
37. Augusta County	..	..	..	..	..	..	..	6	..	..	7	..	..	..	CW
38. Waynesboro	..	..	..	..	..	..	..	6	..	..	2	..	..	..	..
39. Lexington	..	..	..	..	..	..	1	5	40	..	1	..	..	..	15
40. Peaks of Otter	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
41. Fincastle	..	..	..	..	..	4	..	7	..	..	2	..	..	..	49
42. Roanoke	..	..	..	..	..	12	..	29	..	..	..	..	..	..	45
43. Blacksburg	..	..	..	..	..	67	2	55	..	1	1	..	..	1	105
44. Giles County	..	..	..	..	..	2	..	17	2	..	..	..	..	..	..
45. Tazewell	..	..	..	..	..	..	..	2	..	..	2	..	..	..	20
46. Mount Rogers-Whitetop	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
47. Glade Spring	..	CW	..	..	..	..	..	8	..	..	..	..	..	1	181
48. Blackford	..	..	..	..	..	..	..	1	5	..	..	..	..	..	..
49. Bristol	..	..	..	..	..	99	..	25	..	..	..	..	..	..	130
50. Buchanan County	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3
51. Breaks Interstate Park	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
52. Wise County	..	..	..	..	..	..	..	2	..	..	..	..	..	1	10
Totals	3,204	71	1,638	897	193	10,812	202	3,692	1,226	1,430	14,101	482	1	5	2,271

Table 1. Number of Individuals of Each Species Seen (page 4 of 15)

SPECIES COUNT CIRCLE	Northern Bobwhite	Red-throated Loon	Common Loon	Pied-billed Grebe	Horned Grebe	Red-necked Grebe	Western Grebe	Eared Grebe	Northern Gannet	American White Pelican	Brown Pelican	Double-crested Cormorant	Great Cormorant	American Bittern	Great Blue Heron (blue form)
1. Chincoteague	...	82	69	6	182	...	...	...	18	...	...	2	...	CW	83
2. Wachapreague	11	1	31	6	57	...	...	...	...	...	...	3	...	...	26
3. Nassawaddox	6	7	22	8	51	...	...	...	...	...	...	1	...	...	22
4. Cape Charles	...	437	144	49	145	...	...	1	72	...	23	300	55	...	87
5. Chesapeake Bay	...	2,200	7	...	1	1	...	...	3,800	...	12	1,100	24	...	...
6. Little Creek	...	122	36	77	14	...	...	...	5,000	...	207	12,000	6	...	100
7. Back Bay	...	34	11	41	...	...	...	...	98	4	9	157	...	3	59
8. Nansemond River	1	7	40	48	504	1	...	...	3	...	40	5,232	...	...	39
9. Dismal Swamp	4	...	...	...	...	...	...	...	...	...	2
10. Newport News	...	6	44	50	...	1	...	...	18	...	64	2,312	...	...	94
11. Mathews County	...	6	96	8	11	...	...	...	43	...	3	22	...	...	53
12. Williamsburg	...	3	14	48	13	...	...	...	...	...	16	1,081	...	...	99
13. Hopewell	3	...	1	11	16	...	...	...	...	...	...	1,497	...	...	76
14. Walkerton	16	...	1	21	...	...	...	...	...	...	...	28	...	...	46
15. Washingtons Birthplace	15	...	17	...	4	...	...	...	...	...	...	86	...	...	10
16. Brooke	8	32	3	...	...	...	...	...	...	92	...	...	56
17. Fort Belvoir	1	40	38	...	...	...	...	...	...	53	...	...	196
18. Central Loudoun County	6	1	...	...	...	...	...	...	...	...	...	34
19. The Plains	14	1	...	...	...	...	...	...	...	...	...	6
20. Manassas-Bull Run	12	...	1	11	3	...	...	...	...	...	...	...	...	...	31
21. Nokesville	1	4	...	...	...	...	...	...	...	...	...	...	7
22. Chancellorsville	20	1	...	...	...	...	...	...	1	...	...	2
23. Lake Anna	29	43	32	...	...	...	...	...	...	5	...	...	21
24. Gordonsville	5
25. Charlottesville	19	1	...	...	...	...	...	...	...	...	...	14
26. Warren	8	...	...	...	...	...	...	...	1	...	...	6
27. Darlington Heights	2	1	...	...	...	...	...	...	...	...	...	5
28. Banister River	2	...	...	...	...	...	...	...	...	...	...	9
29. Lynchburg	40	1	...	...	...	...	...	...	1	...	...	20
30. Chatham	1
31. Danville	6	...	...	...	...	...	...	...	...	...	...	4
32. Calmes Neck	1	2	...	...	...	...	...	...	...	...	...	...	15
33. N. Shenandoah Valley	4	...	...	2	...	...	...	...	...	...	...	4	...	...	35
34. Shenandoah NP-Luray	3	...	...	...	...	...	...	...	...	...	...	18
35. Big Flat Mountain
36. Rockingham County	9
37. Augusta County	3	...	...	...	...	...	...	...	...	...	5
38. Waynesboro	8
39. Lexington	9	...	...	...	...	...	...	...	...	...	...	15
40. Peaks of Otter
41. Fincastle	1	...	...	...	...	...	...	...	...	...	...	5
42. Roanoke	1	...	...	5
43. Blacksburg	1	3	2	...	...	...	...	...	...	...	...	...	20
44. Giles County	6	...	...	...	...	...	...	...	...	...	...	8
45. Tazewell	6	...	...	...	...	...	...	...	...	...	...	6
46. Mount Rogers-Whitetop	1
47. Glade Spring	6	...	...	...	...	...	...	...	...	...	...	20
48. Blackford	6
49. Bristol	3	51	5	...	...	...	...	...	...	1	...	...	30
50. Buchanan County	1	...	...	...	...	...	...	...	...	...	...	1
51. Breaks Interstate Park	1	...	...	...	...	...	...	...	...	...	...	4
52. Wise County	1
Totals	68	2,905	578	711	1,094	3	1	1	9,052	4	374	23,980	85	3	1,425

Table 1. Number of Individuals of Each Species Seen (page 5 of 15)

SPECIES COUNT CIRCLE	Great Egret	Snowy Egret	Little Blue Heron	Tricolored Heron	Black-crowned Night-Heron	White Ibis	Glossy Ibis	Black Vulture	Turkey Vulture	Osprey	Bald Eagle	Northern Harrier	Sharp-shinned Hawk	Cooper's Hawk	Accipiter sp.	Red-shouldered Hawk	Red-tailed Hawk
1. Chincoteague	63	..	..	1	..	..	..	28	166	..	17	13	1	1	..	3	5
2. Wachapreague	2	..	..	..	4	..	..	39	133	..	46	12	7	4	..	6	8
3. Nassawaddox	65	116	..	45	17	5	2	1	4	22
4. Cape Charles	6	2	2	18	6	8	..	190	290	..	48	34	18	12	..	14	37
5. Chesapeake Bay	2	..	..	..	..	..	..	..	..
6. Little Creek	68	4	..	..	4	..	..	29	67	4	12	2	2	5	..	2	12
7. Back Bay	74	7	..	13	..	212	2	24	40	1	11	37	3	3	..	2	14
8. Nansemond River	7	..	..	..	..	..	..	46	86	6	16	11	4	6	..	11	30
9. Dismal Swamp	20	48	..	4	2	1	1	..	9	5
10. Newport News	73	..	..	..	1	..	..	13	25	6	23	7	3	12	..	5	20
11. Mathews County	10	119	..	24	6	4	2	..	5	15
12. Williamsburg	2	..	..	209	313	..	61	3	8	7	..	27	38
13. Hopewell	118	196	2	61	7	4	6	..	16	18
14. Walkerton	174	216	..	60	9	1	2	..	38	23
15. Washingtons Birthplace	144	94	..	97	8	1	2	..	3	15
16. Brooke	220	75	..	216	5	4	5	..	30	16
17. Fort Belvoir	1	..	..	..	..	..	..	64	77	..	160	9	12	14	2	62	54
18. Central Loudoun County	96	147	..	28	3	5	11	2	103	68
19. The Plains	187	255	..	28	8	4	5	..	108	95
20. Manassas-Bull Run	236	160	..	25	6	7	17	6	89	45
21. Nokesville	70	3	..	36	3	..	..	..	19	5
22. Chancellorsville	13	119	..	4	1	2	..	..	9	7
23. Lake Anna	46	50	..	14	4	1	2	..	15	20
24. Gordonsville	25	144	..	4	4	2	2	..	24	38
25. Charlottesville	244	368	..	6	3	5	4	..	25	39
26. Warren	83	174	..	3	2	2	4	..	13	30
27. Darlington Heights	19	2	..	..	3	4	..	..	16	14
28. Banister River	47	99	..	2	CW	3	1	..	3	4
29. Lynchburg	61	200	..	3	..	2	4	..	10	18
30. Chatham	1	23	..	1	1	1	1	..	4	1
31. Danville	14	62	..	2	1	..	1	..	1	7
32. Calmes Neck	91	144	..	22	4	2	11	..	61	69
33. N. Shenandoah Valley	56	95	..	11	7	9	12	..	53	71
34. Shenandoah NP-Luray	4	..	..	16	36	..	9	4	2	4	..	18	45
35. Big Flat Mountain	2	..	..	..	..	..	..	..	5
36. Rockingham County	13	171	..	3	..	7	7	..	3	33
37. Augusta County	118	361	..	3	8	4	6	..	8	50
38. Waynesboro	1	..	..	72	251	..	3	3	2	6	..	14	49
39. Lexington	88	181	..	7	1	4	9	..	9	35
40. Peaks of Otter	7	4	..	..	..	..	..	..	..	1
41. Fincastle	90	168	..	..	1	3	4	..	1	42
42. Roanoke	25	29	..	..	..	6	5	..	1	7
43. Blacksburg	59	4	..	1	..	1	7	1	3	9
44. Giles County	82	44	..	3	..	1	2	..	..	11
45. Tazewell	2	..	..	..	1	..	..	3	3
46. Mount Rogers-Whitetop	16	..	..	..	..	1	..	..	8
47. Glade Spring	12	75	..	1	..	3	1	..	..	23
48. Blackford	8	25	..	1	..	3	2	..	7	17
49. Bristol	114	263	..	3	..	3	5	..	1	9
50. Buchanan County	1	1	3
51. Breaks Interstate Park	1	..	..	2	1	..	..	3	6
52. Wise County	1	..	..	..	..	1	..	5	3
Totals	294	13	2	32	22	220	2	3,386	5,742	19	1,124	251	168	219	13	867	1,222

Table 1. Number of Individuals of Each Species Seen (page 6 of 15)

SPECIES COUNT CIRCLE	Rough-legged Hawk	Buteo sp.	Golden Eagle	large hawk sp.	hawk sp.	American Kestrel	Merlin	Peregrine Falcon	Clapper Rail	King Rail	Virginia Rail	Sora	Purple Gallinule	Common Gallinule	American Coot	Black-bellied Plover	Semipalmated Plover	Killdeer
1. Chincoteague	1	..	..	..	..	..	..	..	..	1	13	..	1
2. Wachapreague	23	..	3	4	..	..	..	..	..	..	65	5	82
3. Nassawaddox	7	1	3	3	..	..	..	..	..	..	41	..	119
4. Cape Charles	1	..	..	..	..	13	3	9	74	..	10	..	..	1	24	671	28	25
5. Chesapeake Bay	1	..	..	..	..	..	..	..	..	..	..
6. Little Creek	1	..	..	..	..	..	..	2	11	..	..	..	CW	..	43	..	..	..
7. Back Bay	8	4	..	..	7	12	3	..	2	21	..	..	65
8. Nansemond River	13	1	2	41	..	1	2	..	..	2	..	..	93
9. Dismal Swamp	4	..	..	..	..	..	..	..	..	2	..	..	3
10. Newport News	5	..	1	2	..	1	..	..	..	33	15	..	89
11. Mathews County	2	..	3	4	..	..	..	..	..	..	3	..	51
12. Williamsburg	10	..	..	4	..	..	..	..	..	13	..	..	70
13. Hopewell	8	..	2	..	1	..	..	..	..	84	..	..	118
14. Walkerton	7	1	1	..	..	..	..	..	..	7	..	..	318
15. Washingtons Birthplace	3	..	..	..	..	..	..	..	..	..	..	..	78
16. Brooke	1	..	..	..	..	..	..	..	5,210	..	..	45
17. Fort Belvoir	4	1	3	..	1	3	..	..	..	3,408	..	..	105
18. Central Loudoun County	..	1	..	..	..	13	1	..	..	..	1	..	..	..	1	..	..	CW
19. The Plains	9	..	..	..	..	..	..	..	..	1	..	..	27
20. Manassas-Bull Run	4	1	..	..	..	..	..	..	..	..	..	..	46
21. Nokesville	6	..	..	..	..	..	..	..	..	..	..	..	5
22. Chancellorsville	1	..	..	..	..	..	..	..	..	..	..	62	..	..	..
23. Lake Anna	2	..	..	..	..	..	..	..	..	8	..	..	7
24. Gordonsville	3	10	..	..	..	..	..	..	..	..	..	..	..	14
25. Charlottesville	1	3	..	..	..	..	..	..	..	..	..	..	8
26. Warren	8	1	..	..	..	..	..	..	..	..	..	..	..
27. Darlington Heights	11	..	..	..	..	..	..	..	..	..	..	..	39
28. Banister River	3	..	..	..	..	..	..	..	..	..	..	..	5
29. Lynchburg	3	1	..	..	..	..	..	..	..	13	..	..	7
30. Chatham	5	..	..	..	..	..	..	..	..	..	..	..	..
31. Danville	4
32. Calmes Neck	9	..	..	..	..	..	..	..	..	..	..	..	16
33. N. Shenandoah Valley	1	..	..	..	..	26	2	1	..	..	3	..	..	..	..	..	..	12
34. Shenandoah NP-Luray	1	..	..	..	..	28	1	..	..	..	..	..	..	..	1	..	..	11
35. Big Flat Mountain
36. Rockingham County	..	2	..	..	..	47	..	..	..	..	..	..	..	..	5	..	..	18
37. Augusta County	51	..	1	..	..	..	..	..	..	8	..	..	9
38. Waynesboro	15	..	..	..	..	..	..	..	..	10	..	..	7
39. Lexington	10	1	..	..	..	..	..	..	..	4	..	..	4
40. Peaks of Otter
41. Fincastle	12	..	..	..	..	..	..	..	..	..	..	..	13
42. Roanoke	3	1	..	..	..	..	..	..	..	..	..	..	45
43. Blacksburg	..	2	..	..	..	12	..	..	..	..	..	..	..	..	1	..	..	35
44. Giles County	2	..	..	..	..	..	..	..	..	..	..	..	..
45. Tazewell	1	..	..	..	..	..	..	..	..	9	..	..	30
46. Mount Rogers-Whitetop	2	..	..	..	..	..	..	..	..	..	..	..	..
47. Glade Spring	31	..	..	..	..	2	..	..	..	8	..	..	61
48. Blackford	1	..	2	..	..	22	..	..	..	..	..	..	..	..	1	..	..	..
49. Bristol	16	..	..	..	..	..	..	..	..	31	..	..	1
50. Buchanan County
51. Breaks Interstate Park	1	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..
52. Wise County	2	..	..	..	..	..	..	..	..	3	..	..	..
Totals	6	5	2	1	3	475	24	32	143	9	33	5	CW	3	9,014	808	33	1,686

Table 1. Number of Individuals of Each Species Seen (page 7 of 15)

SPECIES COUNT CIRCLE	American Oystercatcher	Spotted Sandpiper	Greater Yellowlegs	Willet	Lesser Yellowlegs	yellowlegs sp.	Whimbrel	Marbled Godwit	Ruddy Turnstone	Red Knot	Sanderling	Western Sandpiper	Least Sandpiper	Pectoral Sandpiper	Purple Sandpiper	Dunlin	peep sp.
1. Chincoteague	18	...	47	165	2	...	...	24	1	...	129	...	...	...	...	500	2
2. Wachapreague	10	...	33	70	2	...	3	...	...	...	...	17	...	...	...	3,423	36
3. Nassawadox	960	2	58	188	1	...	...	95	8	...	150	10	...	...	...	4,018	...
4. Cape Charles	236	...	161	784	8	...	17	15	54	9	239	147	...	...	3	7,937	...
5. Chesapeake Bay	16	...	8	...	...	...	20	...	...
6. Little Creek	27	...	6	...	...	...	...	...	19	...	171	...	...	...	19	65	...
7. Back Bay	4	...	2	...	...	...	...	...	120	...	...	...	...	...	...
8. Nansemond River	3	...	...	...	...	...	...	...	61	1,000	10	...	...	...	...
9. Dismal Swamp
10. Newport News	17	5	1	...	...	...	18	...	250	8	1	...	...	716	...
11. Mathews County	9	1	...	...	...	...	2	...	235	...	1	...	...	146	...
12. Williamsburg	136	...
13. Hopewell	1	...	...	...	...	...	...	...	...	1	...	...	...
14. Walkerton	5	...	...	3	...	...	...	...	...	...	...	...	...	8	...
15. Washingtons Birthplace	2	...
16. Brooke
17. Fort Belvoir	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18. Central Loudoun County
19. The Plains
20. Manassas-Bull Run
21. Nokesville
22. Chancellorsville
23. Lake Anna
24. Gordonsville
25. Charlottesville
26. Warren
27. Darlington Heights
28. Banister River
29. Lynchburg
30. Chatham
31. Danville
32. Calmes Neck
33. N. Shenandoah Valley
34. Shenandoah NP-Luray
35. Big Flat Mountain
36. Rockingham County
37. Augusta County	1	...
38. Waynesboro
39. Lexington
40. Peaks of Otter
41. Fincastle
42. Roanoke
43. Blacksburg
44. Giles County
45. Tazewell
46. Mount Rogers-Whitetop
47. Glade Spring
48. Blackford
49. Bristol
50. Buchanan County
51. Breaks Interstate Park
52. Wise County
Totals	1,251	2	352	1,213	17	3	20	134	118	9	1,363	1,182	12	1	42	16,952	38

Table 1. Number of Individuals of Each Species Seen (page 8 of 15)

SPECIES COUNT CIRCLE	Short-billed Dowitcher	Long-billed Dowitcher	Dowitcher sp.	Wilson's Snipe.	American Woodcock	shorebird sp.	Laughing Gull	Little Gull	Black-headed Gull	Bonaparte's Gull	Ring-billed Gull	Herring Gull	Thayer's Gull	Lesser Black- backed Gull	Iceland Gull	Glaucous Gull	Great Black- backed Gull
1. Chincoteague	10	...	...	...	...	5	530	902	...	32	...	...	215
2. Wachapreague	16	...	22	...	...	...	...	...	...	...	663	278	...	...	...	...	59
3. Nassawaddox	2	...	...	...	4	...	...	...	...	1	166	166	...	...	...	...	101
4. Cape Charles	63	2	...	3	54	...	...	...	...	22	534	606	...	1	...	...	432
5. Chesapeake Bay	4	150	600	...	6	2	1	70
6. Little Creek	352	5,650	1,268	1	91	...	...	359
7. Back Bay	10	5	...	3	1	1	2,500	1,719	58	...	84	...	CW	167
8. Nansemond River	2	14	...	8	...	...	1	1,881	250	...	2	...	...	57
9. Dismal Swamp	3	...	...	...	...	...	1	6	...	...	...	...	...
10. Newport News	27	...	...	1	...	...	23	...	...	13	1,753	174	...	1	...	...	164
11. Mathews County	8	4	...	...	...	...	11	639	92	...	...	...	...	56
12. Williamsburg	6	CW	...	4	...	...	30	654	58	...	1	...	...	33
13. Hopewell	40	1	1	208	...	...	23	8,132	3,548	...	...	...	...	102
14. Walkerton	8	19	...	...	...	...	...	852	4	...	...	...	...	...
15. Washingtons Birthplace	6	...	...	...	...	...	...	2,223	7	...	...	...	...	CW
16. Brooke	1	...	259	...	...	1	7,833	154	...	...	...	...	16
17. Fort Belvoir	7	...	...	...	...	...	6,530	780	...	1	...	...	147
18. Central Loudoun County	1,201	9	...	...	...	...	CW
19. The Plains	3	...	...	CW	...	...	...	5,030	72	...	...	...	...	36
20. Manassas-Bull Run	1,253	21	...	...	...	...	...
21. Nokesville	1	...	...	...	...	...	...	2,886	57	...	...	...	...	2
22. Chancellorsville	2	...	...	...	...	...	...	24	...	...	...	...	...	...
23. Lake Anna	31	3,502	261	...	...	...	...	237
24. Gordonsville
25. Charlottesville	1	...	...	...	...	...	...	2	...	...	...	...	...	...
26. Warren	3	1	...	...	...	...	...	...	...	...	...	...	...	...
27. Darlington Heights	2	...	...	...	...	...	3	...	...	...	...	...	...
28. Banister River	3	...	...	...	...	66	579	2	...	...	...	...	...
29. Lynchburg	20	...	...	...	...	...	...
30. Chatham
31. Danville
32. Calmes Neck	12	...	...	...	...	...	...	1	...	...	...	...	...	...
33. N. Shenandoah Valley	1	...	...	...	...	...	...	CW	...	...	...	...	...	...
34. Shenandoah NP-Luray	4	...	...	...	...	...	...	...	...	...	...	...	...	...
35. Big Flat Mountain
36. Rockingham County
37. Augusta County
38. Waynesboro
39. Lexington	3	...	...	...	...	...	...	...	...	...	...	...	...	...
40. Peaks of Otter
41. Fincastle	1	...	...	...	...	...	...	...	...	...	...	...	...	...
42. Roanoke	1	...	...	...	...	...	...	53	...	...	...	...	...	...
43. Blacksburg	291	...	...	...	...	...	...
44. Giles County
45. Tazewell
46. Mount Rogers-Whitetop
47. Glade Spring	8	...	...	...	...	...	...	...	...	...	...	...	...	...
48. Blackford
49. Bristol	4	...	...	...	...	...	...	3,418	...	...	...	...	...	...
50. Buchanan County
51. Breaks Interstate Park
52. Wise County
Totals	108	2	22	128	128	1	505	1	1	3,060	58,173	9,373	1	219	2	1	2,253

Table 1. Number of Individuals of Each Species Seen (page 9 of 15)

SPECIES COUNT CIRCLE	gull sp.	Forster's Tern	Royal Tern	Dovekie	Rock Pigeon	Eurasian Collared-Dove	Mourning Dove	Barn Owl	Eastern Screech-Owl	Great Horned Owl	Snowy Owl	Barred Owl	Long-eared Owl	Short-eared Owl	Northern Saw-whet Owl	Ruby-throated Hummingbird	Rufous Hummingbird
1. Chincoteague	...	98	..	..	259	...	266	...	7	10	2	...	1	..	..	..	..
2. Wachapreague	113	...	237	...	...	...	...	...	...	..	..	..	..
3. Nassawadox	25	...	..	..	21	...	234	...	...	1	...	...	...	..	..	..	..
4. Cape Charles	1,063	24	302	...	7	14	1	...	1	..	..	..	..
5. Chesapeake Bay	14	...	...	...	...	...	...	...	...	..	..	..	..
6. Little Creek	...	8	1	5	929	...	121	...	3	4	...	...	...	..	..	1	..
7. Back Bay	...	149	1	..	58	10	300	...	9	8	...	2	...	..	..	..	..
8. Nansemond River	206	...	320	5	5	8	2	1	...	2	..	..	..
9. Dismal Swamp	10	...	..	..	...	...	8	...	14	3	...	12	...	..	..	..	..
10. Newport News	1,000	14	1	..	361	...	320	...	...	...	...	...	...	..	..	..	..
11. Mathews County	23	11	..	..	19	...	324	...	...	11	...	...	...	..	..	..	..
12. Williamsburg	...	54	..	..	268	...	353	...	1	6	...	1	...	..	..	..	3
13. Hopewell	1,000	21	..	..	176	...	313	2	1	5	...	5	...	..	..	..	..
14. Walkerton	38	...	471	...	8	19	...	9	...	..	..	..	..
15. Washingtons Birthplace	...	2	..	..	...	...	210	...	1	19	1	4	...	..	..	..	..
16. Brooke	29	...	218	...	1	...	...	...	...	..	..	..	..
17. Fort Belvoir	898	...	..	..	579	...	498	...	20	14	...	17	...	..	1	...	..
18. Central Loudoun County	341	...	680	1	...	1	...	5	...	..	CW	...	..
19. The Plains	99	...	286	CW	20	11	...	1	...	2	...	..	..
20. Manassas-Bull Run	261	...	..	..	366	...	460	...	...	2	...	6	...	..	..	..	..
21. Nokesville	2	...	..	..	1	...	260	3	...	...	...	...	...	..	..	..	..
22. Chancellorsville	12	...	70	...	...	...	...	...	...	..	..	..	..
23. Lake Anna	6	...	144	...	CW	8	...	2	...	..	..	..	..
24. Gordonsville	71	...	372	1	...	...	...	...	...	..	..	..	..
25. Charlottesville	52	...	77	...	5	3	...	...	...	..	..	..	..
26. Warren	73	...	465	1	...	1	...	...	...	..	..	..	..
27. Darlington Heights	33	...	333	...	2	7	...	1	...	..	..	..	..
28. Banister River	14	...	139	...	1	1	...	1	...	..	..	..	..
29. Lynchburg	32	...	145	...	5	3	...	...	...	..	..	..	1
30. Chatham	1	...	51	...	1	2	...	...	...	..	..	..	..
31. Danville	60	...	86	...	...	...	...	...	...	..	..	..	..
32. Calmes Neck	395	...	540	...	5	10	...	10	...	..	..	..	..
33. N. Shenandoah Valley	238	...	1,003	1	15	3	...	2	...	..	..	..	..
34. Shenandoah NP-Luray	513	...	307	...	3	1	...	1	...	..	..	..	..
35. Big Flat Mountain	4	...	1	...	...	2	...	..	..	..	..
36. Rockingham County	1,267	...	360	...	1	3	1	...	...	..	..	..	..
37. Augusta County	352	...	374	2	1	1	...	...	...	3	...	..	..
38. Waynesboro	67	...	179	...	4	2	1	1	...	..	..	..	..
39. Lexington	674	...	258	...	18	2	...	1	...	..	..	..	..
40. Peaks of Otter
41. Fincastle	71	...	248	...	1	1	...	...	...	..	..	..	..
42. Roanoke	91	...	83	...	1	...	...	...	...	..	..	..	..
43. Blacksburg	306	5	284	...	8	CW	...	...	...	..	..	..	1
44. Giles County	24	...	27	...	2	1	...	...	...	..	..	..	..
45. Tazewell	78	...	40	...	1	...	...	...	...	..	..	..	..
46. Mount Rogers-Whitetop	118	...	48	...	2	...	...	...	...	..	..	..	..
47. Glade Spring	668	19	314	CW	8	1	...	...	...	..	..	..	..
48. Blackford	10	...	192	...	10	1	...	...	...	..	..	..	..
49. Bristol	325	...	539	1	1	1	...	1	...	..	..	..	..
50. Buchanan County	65	...	...	...	...	1	...	..	..	..	..
51. Breaks Interstate Park	140	...	30	...	1	...	...	1	...	..	..	..	..
52. Wise County	137	...	96	...	...	...	...	1	...	..	..	..	..
Totals	3,219	357	3	5	10,768	58	13,054	17	194	188	8	88	2	7	1	1	5

Table 1. Number of Individuals of Each Species Seen (page 10 of 15)

SPECIES COUNT CIRCLE	Allen's/Rufous hummingbird sp.	Belted Kingfisher	Red-headed Woodpecker	Red-bellied Woodpecker	Yellow-bellied Sapsucker	Downy Woodpecker	Hairy Woodpecker	Northern (Yellow-shafted) Flicker	Pileated Woodpecker	Eastern Phoebe	Vermilion Flycatcher	Loggerhead Shrike	White-eyed Vireo	Blue-headed Vireo	Blue Jay	American Crow
1. Chincoteague	..	21	...	11	2	5	7	48	4	5	..	..	..	..	12	249
2. Wachapreague	..	17	1	28	6	16	5	66	7	13	..	..	..	..	37	523
3. Nassawaddox	..	16	...	36	8	8	2	49	14	5	..	..	..	..	41	389
4. Cape Charles	..	27	4	101	18	32	19	154	20	22	..	..	..	..	176	463
5. Chesapeake Bay
6. Little Creek	..	24	5	66	13	42	3	45	12	2	..	..	..	..	51	852
7. Back Bay	..	30	...	36	2	13	4	29	6	3	..	..	..	..	27	283
8. Nansemond River	..	20	3	112	23	58	9	63	25	5	..	..	1	3	242	267
9. Dismal Swamp	..	6	3	63	25	53	22	35	39	7	..	..	..	2	12	4
10. Newport News	1	43	3	80	13	45	5	65	11	2	..	..	..	..	298	234
11. Mathews County	..	45	1	74	24	37	3	85	14	2	..	..	..	..	223	490
12. Williamsburg	..	25	12	210	78	87	19	87	34	22	..	..	..	..	186	475
13. Hopewell	..	15	1	113	41	72	11	129	33	29	..	..	..	..	81	295
14. Walkerton	..	28	1	102	40	68	13	123	64	27	1	..	..	..	83	814
15. Washingtons Birthplace	..	14	...	49	15	26	5	56	8	7	..	..	..	..	55	368
16. Brooke	..	28	4	92	20	77	14	83	48	8	..	..	..	..	58	448
17. Fort Belvoir	..	56	22	503	51	345	81	360	99	11	..	..	..	..	870	3,974
18. Central Loudoun County	..	18	3	149	37	138	21	192	38	4	..	..	..	..	85	667
19. The Plains	..	15	...	108	28	114	13	111	39	5	..	..	..	..	116	774
20. Manassas-Bull Run	..	21	...	250	19	200	31	151	38	3	..	..	..	..	500	1,501
21. Nokesville	..	4	...	24	2	17	4	32	2	..	..	..	..	..	57	464
22. Chancellorsville	..	5	...	10	1	8	4	13	8	3	..	..	..	..	27	277
23. Lake Anna	..	9	1	29	10	23	2	54	13	5	..	..	..	..	57	339
24. Gordonsville	..	5	...	20	3	9	2	23	7	6	..	..	..	..	14	366
25. Charlottesville	..	18	...	72	29	102	15	80	49	16	..	..	..	..	22	711
26. Warren	..	4	...	40	12	34	3	43	20	16	..	..	..	..	22	446
27. Darlington Heights	..	3	1	30	15	25	6	31	16	23	..	..	..	..	46	488
28. Banister River	..	4	19	37	10	11	4	52	7	2	..	..	..	..	87	166
29. Lynchburg	..	13	CW	74	24	74	10	64	38	8	..	..	..	..	71	590
30. Chatham	8	3	3	...	3	3	1	..	..	..	..	10	70
31. Danville	15	5	9	1	4	1	5	..	..	..	..	22	63
32. Calmes Neck	..	16	6	156	41	121	25	93	34	3	..	..	..	..	78	596
33. N. Shenandoah Valley	..	43	3	109	57	180	28	70	41	1	..	..	..	..	129	1,858
34. Shenandoah NP-Luray	..	15	...	72	32	81	4	21	15	9	..	..	..	..	54	757
35. Big Flat Mountain	..	2	...	9	4	16	3	4	9	2	..	..	..	..	2	20
36. Rockingham County	..	8	2	53	13	45	9	26	11	4	..	..	..	..	90	141
37. Augusta County	..	4	2	68	...	50	2	25	13	2	..	..	..	..	174	759
38. Waynesboro	..	3	2	34	7	46	8	24	24	8	..	..	..	..	83	605
39. Lexington	..	21	...	83	19	56	20	31	36	15	..	..	..	..	139	734
40. Peaks of Otter	15	4	21	2	6	16	3	..	..	..	..	1	36
41. Fincastle	..	8	...	34	12	33	4	39	13	10	..	..	..	..	91	586
42. Roanoke	..	9	...	18	8	23	2	7	1	2	..	..	..	..	26	79
43. Blacksburg	..	8	...	61	13	76	11	20	20	19	..	..	..	..	124	719
44. Giles County	..	9	...	27	8	34	11	26	15	7	..	..	..	..	68	109
45. Tazewell	..	4	2	7	1	11	4	1	4	1	..	..	..	..	8	316
46. Mount Rogers-Whitetop	..	3	...	7	1	5	1	7	5	3	..	..	..	..	16	301
47. Glade Spring	..	13	...	25	5	27	2	5	4	4	..	..	..	..	127	1,074
48. Blackford	..	17	...	18	12	14	1	11	5	6	..	3	..	..	72	963
49. Bristol	..	6	1	34	...	16	4	20	8	15	..	1	..	..	129	457
50. Buchanan County	..	4	...	10	6	8	4	8	8	..	..	..	..	..	39	142
51. Breaks Interstate Park	..	4	...	6	1	9	3	9	13	3	..	..	..	..	19	115
52. Wise County	..	2	...	18	1	13	3	3	18	4	..	..	..	..	52	600
Totals	1	733	102	3,406	822	2,636	489	2,786	1,030	388	1	4	1	5	5,109	28,017

Table 1. Number of Individuals of Each Species Seen (page 11 of 15)

SPECIES COUNT CIRCLE	Fish Crow	crow sp.	Common Raven	Horned Lark	Tree Swallow	Carolina Chickadee	Black-capped Chickadee	chickadee sp.	Tufted Titmouse	Red-breasted Nuthatch	White-breasted Nuthatch	Brown-headed Nuthatch	Brown Creeper	Carolina Wren	House Wren	Winter Wren
1. Chincoteague	5	11	..	30	..	62	..	..	25	..	..	18	2	61	2	5
2. Wachapreague	24	..	..	1	..	120	..	..	41	1	1	22	5	77	..	1
3. Nassawaddox	3	77	..	..	..	34	..	..	14	..	2	14	1	64	1	1
4. Cape Charles	58	40	..	28	90	131	..	..	86	..	..	32	16	237	16	16
5. Chesapeake Bay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Little Creek	872	..	..	..	..	128	..	..	85	..	12	34	7	78	..	10
7. Back Bay	17	..	..	4	6	54	..	..	30	..	3	22	3	55	3	4
8. Nansemond River	493	398	..	..	..	196	..	..	64	3	9	19	7	207	5	20
9. Dismal Swamp	..	..	..	..	..	108	..	..	25	2	26	1	1	95	..	18
10. Newport News	71	9	..	..	..	229	..	..	209	..	15	10	7	126	5	7
11. Mathews County	2	..	..	..	..	152	..	..	149	5	1	89	3	143	..	1
12. Williamsburg	2	22	..	..	..	433	..	..	425	..	137	32	15	294	..	19
13. Hopewell	..	1	..	27	..	263	..	..	211	..	23	..	18	260	3	25
14. Walkerton	4	4	..	77	..	151	..	..	161	..	38	..	17	218	2	43
15. Washingtons Birthplace	..	..	..	258	..	59	..	..	68	..	13	..	..	95	..	2
16. Brooke	56	..	..	..	..	224	1	..	190	2	89	..	12	140	..	6
17. Fort Belvoir	1,777	1,147	1	..	..	1,449	..	..	1,218	3	396	..	42	803	2	77
18. Central Loudoun County	12	255	5	..	..	382	..	..	289	..	144	..	32	166	..	5
19. The Plains	28	76	6	104	..	440	..	..	233	..	114	..	8	293	..	3
20. Manassas-Bull Run	1,204	558	3	..	..	691	..	..	571	1	239	..	16	442	..	18
21. Nokesville	2	..	..	12	..	94	..	..	73	..	5	..	..	36	..	1
22. Chancellorsville	..	..	..	..	..	62	..	..	44	..	16	..	1	18	..	1
23. Lake Anna	4	..	..	15	..	43	..	..	98	..	22	..	5	47	..	..
24. Gordonsville	..	..	..	6	..	29	..	..	55	6	19	..	2	31	..	..
25. Charlottesville	110	..	13	1	..	266	..	..	244	..	121	..	7	275	..	25
26. Warren	..	..	3	75	..	142	..	..	111	..	48	..	4	106	..	3
27. Darlington Heights	..	..	1	90	..	70	..	..	52	1	18	..	7	66	..	1
28. Banister River	..	..	..	..	..	34	..	..	65	..	10	4	2	56	..	5
29. Lynchburg	1	..	9	..	..	211	..	..	267	..	67	..	6	181	..	10
30. Chatham	..	..	..	..	..	9	..	..	24	..	2	1	CW	13	..	..
31. Danville	..	..	..	..	..	29	..	..	32	..	8	..	..	25	..	1
32. Calmes Neck	4	..	17	9	..	345	..	..	248	2	132	..	19	170	..	5
33. N. Shenandoah Valley	..	..	13	1	..	584	..	..	439	..	197	..	36	337	..	94
34. Shenandoah NP-Luray	62	..	63	295	..	152	..	..	115	..	72	..	11	83	..	13
35. Big Flat Mountain	..	..	12	..	..	29	..	..	25	..	17	..	5	14	..	7
36. Rockingham County	..	..	6	634	..	50	1	..	104	..	40	..	5	55	..	1
37. Augusta County	17	..	5	68	..	191	2	..	119	..	55	..	3	87	..	4
38. Waynesboro	20	..	18	21	..	156	..	..	128	1	43	..	7	68	..	3
39. Lexington	181	..	20	6	..	161	25	41	224	..	79	..	3	181	..	6
40. Peaks of Otter	..	..	4	..	..	47	1	..	27	..	25	..	4	34	..	..
41. Fincastle	..	..	8	15	..	62	..	..	72	..	27	..	..	44	..	2
42. Roanoke	..	..	1	..	..	58	..	..	50	..	26	1	3	60	..	..
43. Blacksburg	..	..	9	230	..	194	..	1	163	..	96	..	13	143	..	11
44. Giles County	..	..	4	..	..	79	..	..	59	..	36	..	6	75	..	23
45. Tazewell	..	..	3	..	..	27	..	..	36	..	7	..	1	6	..	..
46. Mount Rogers-Whitetop	..	..	8	160	..	7	8	..	28	7	9	..	1	19	..	1
47. Glade Spring	..	..	3	..	..	70	..	..	66	..	39	..	4	76	..	6
48. Blackford	..	..	22	..	..	43	..	..	33	..	13	..	5	56	..	2
49. Bristol	..	..	1	..	..	91	..	..	85	..	20	..	1	71	..	3
50. Buchanan County	..	..	3	..	..	36	..	..	49	..	20	..	1	35	..	1
51. Breaks Interstate Park	..	..	1	6	..	68	..	..	19	1	5	..	..	38	..	5
52. Wise County	..	..	16	..	..	80	..	..	58	..	12	..	..	17	..	6
Totals	5,029	2,598	278	2,173	96	8,825	38	42	7,306	35	2,568	299	374	6,377	39	521

Table 1. Number of Individuals of Each Species Seen (page 12 of 15)

SPECIES COUNT CIRCLE	Sedge Wren	Marsh Wren	Golden-crowned Kinglet	Ruby-crowned Kinglet	kinglet sp.	Eastern Bluebird	Hermit Thrush	American Robin	Gray Catbird	Northern Mockingbird	Brown Thrasher	European Starling	American Pipit	Cedar Waxwing	Orange-crowned Warbler	Nashville Warbler
1. Chincoteague	12	3	...	55	12	1,445	5	19	9	1,667	9	51	...	...
2. Wachapreague	...	3	31	1	...	302	2	1,079	3	75	2	4,514	...	7	...	...
3. Nassawaddox	35	3	...	116	9	348	4	58	3	1,004	...	57	...	...
4. Cape Charles	6	1	54	25	...	191	73	187	39	126	16	2,241	64	73	6	1
5. Chesapeake Bay	1	...	...	...
6. Little Creek	1	1	53	17	...	104	11	827	2	39	9	1,560	...	205	3	...
7. Back Bay	1	3	41	5	...	90	2	920	14	30	7	1,924	...	22	...	...
8. Nansemond River	1	9	65	39	...	177	25	1,189	8	112	30	1,780	3	684	5	...
9. Dismal Swamp	24	26	...	33	85	598	113	8	17	40	...	47	2	...
10. Newport News	3	3	47	17	...	120	7	933	1	120	19	2,080	...	50	1	...
11. Mathews County	37	12	...	418	10	952	7	102	12	1,205	404	197	...	...
12. Williamsburg	...	2	81	66	...	361	54	1,150	1	116	29	1,020	1	444	1	...
13. Hopewell	93	88	...	254	36	352	...	78	16	767	143	1,743	3	...
14. Walkerton	103	31	...	203	126	1,848	6	61	10	429	313	177	...	...
15. Washingtons Birthplace	14	18	...	113	37	641	6	44	9	1,240	62	704	...	...
16. Brooke	33	24	...	206	16	318	1	80	...	2,084	11	64	...	...
17. Fort Belvoir	1	...	162	46	...	413	175	3,633	...	282	23	2,488	55	303	...	...
18. Central Loudoun County	84	10	...	413	3	995	...	167	...	3,081	...	123	...	...
19. The Plains	38	3	...	397	8	411	...	185	1	965	6	54	...	...
20. Manassas-Bull Run	70	5	...	481	20	1,099	...	142	1	1,901	16	213	...	...
21. Nokesville	7	2	...	82	3	398	...	44	...	1,375	...	38	...	...
22. Chancellorsville	5	6	...	101	2	104	...	34	3	230	...	46	...	...
23. Lake Anna	44	2	...	181	10	612	...	42	1	...	...	65	...	...
24. Gordonsville	9	3	...	169	4	79	...	63	...	471	12	2	...	...
25. Charlottesville	131	32	...	305	39	276	...	86	...	1,472	30	11	...	...
26. Warren	45	9	...	142	21	117	...	43	...	138	...	34	...	...
27. Darlington Heights	63	15	...	159	8	1,154	...	64	...	84	165	247	...	...
28. Banister River	18	9	...	57	10	350	CW	17	7	288	...	158	...	...
29. Lynchburg	82	22	...	261	10	219	...	82	1	1,539	...	547	...	...
30. Chatham	5	2	...	21	1	216	...	6	3	1	1	25	...	...
31. Danville	15	1	...	36	1	277	...	27	1	266	...	18	...	...
32. Calmes Neck	59	3	...	285	8	148	...	92	2	2,303	2	25	...	...
33. N. Shenandoah Valley	...	1	243	100	...	693	22	5,013	...	113	...	9,610	8	312	...	...
34. Shenandoah NP-Luray	55	11	...	276	9	1,723	...	78	...	2,949	5	70	...	...
35. Big Flat Mountain	45	...	...	7	5	...	...	...	...	...	...	...	...	...
36. Rockingham County	26	4	...	171	1	17	...	44	...	6,334	235	...	...	...
37. Augusta County	27	7	...	258	1	392	1	89	...	4,858	25	50	...	...
38. Waynesboro	31	3	...	156	3	111	3	91	1	1,352	15	7	...	...
39. Lexington	162	10	...	157	20	2,539	...	96	...	9,097	...	76	...	...
40. Peaks of Otter	34	4	...	24	2	10	...	...	...	...	...	...	...	...
41. Fincastle	31	5	...	142	5	267	...	62	...	2,302	...	37	...	...
42. Roanoke	28	2	...	22	1	196	...	35	...	210	...	...	...	...
43. Blacksburg	103	8	2	110	5	97	1	83	1	1,867	...	65	...	...
44. Giles County	51	...	...	77	2	63	1	19	...	86	...	9	...	...
45. Tazewell	5	...	...	22	...	30	...	4	...	159	...	...	...	...
46. Mount Rogers-Whitetop	6	...	...	36	...	123	...	13	...	212	...	12	...	...
47. Glade Spring	39	1	...	37	2	31	...	36	...	2,489	1	31	...	...
48. Blackford	7	5	...	32	3	947	...	48	...	1,408	...	17	...	...
49. Bristol	73	2	...	92	7	678	...	60	...	2,275	...	48	...	...
50. Buchanan County	10	...	...	38	4	18	...	2	...	51	14	...	...	...
51. Breaks Interstate Park	11	...	...	8	1	54	...	2	...	329	...	...	...	...
52. Wise County	13	...	...	23	...	62	...	13	...	456	...	12	...	...
Totals	13	23	2,560	707	2	8,627	921	35,246	216	3,332	233	86,201	1,601	7,180	21	1

Table 1. Number of Individuals of Each Species Seen (page 13 of 15)

SPECIES COUNT CIRCLE	Yellow-rumped (Myrtle) Warbler	Pine Warbler	Palm Warbler	Black-and- white Warbler	Louisiana Waterthrush	Common Yellowthroat	Yellow- breasted Chat	Western Tanager	Eastern Towhee	American Tree Sparrow	Chipping Sparrow	Field Sparrow	Vesper Sparrow	Savannah Sparrow	Savannah (Ipswich) Sparrow	Nelson's Sparrow	Saltmarsh Sparrow	sharp-tailed sparrow sp.
	1. Chincoteague	233	20	..	13	55	1	122	1
2. Wachapreague	474	..	..	..	..	..	..	..	1	4	86	..	..	1	..	..	..	..
3. Nassawaddox	993	1	8	..	..	1	..	..	3	..	49	6	..	9	..	..	..	4
4. Cape Charles	2,049	7	25	..	..	2	..	1	71	..	256	27	5	68	20	16	1	9
5. Chesapeake Bay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Little Creek	339	11	2	1	..	..	..	..	28	..	..	10	..	7	1	..	..	..
7. Back Bay	1,219	5	9	..	..	2	..	..	11	..	143	18	..	65	3	..	..	..
8. Nansemond River	707	17	2	2	..	2	..	..	42	..	242	8	2	92	..	2	32	5
9. Dismal Swamp	29	1	..	..	..	..	..	..	43	..	..	2	..	12	..	..	..	..
10. Newport News	259	9	1	..	..	..	..	..	26	..	12	3	..	26	4	..	..	..
11. Mathews County	903	22	..	..	..	..	..	..	38	1	126	10	..	1	..	..	..	..
12. Williamsburg	827	3	..	CW	..	..	..	1	81	..	147	19	..	21	..	..	..	..
13. Hopewell	146	1	2	..	..	2	1	..	20	..	28	62	..	26	..	..	..	..
14. Walkerton	68	1	12	..	..	..	..	..	36	..	46	17	..	78	..	..	..	..
15. Washingtons Birthplace	100	..	..	..	..	..	..	..	18	..	6	8	..	76	..	..	..	..
16. Brooke	73	..	..	..	..	..	..	..	7	..	9	19	..	27	..	..	..	..
17. Fort Belvoir	61	..	..	..	..	..	..	..	169	14	44	110	..	15	..	..	..	..
18. Central Loudoun County	72	..	..	..	..	..	..	..	8	48	12	91	2	..	..	..	..	..
19. The Plains	42	..	..	..	..	..	..	..	10	..	2	96	..	4	..	..	..	..
20. Manassas-Bull Run	158	..	..	..	..	..	..	..	34	6	46	72	..	2	..	..	..	..
21. Nokesville	36	..	..	..	..	..	..	..	6	..	1	10	..	..	..	..	..	..
22. Chancellorsville	13	..	..	..	..	..	..	..	4	..	3	25	..	..	..	..	..	..
23. Lake Anna	61	..	..	..	..	..	..	..	CW	..	2	25	..	7	..	..	..	..
24. Gordonsville	15	..	..	1	..	..	..	..	1	..	13	4	..	..	..	..	..	..
25. Charlottesville	72	..	..	..	..	..	..	..	11	..	11	82	..	2	..	..	..	..
26. Warren	42	..	..	..	..	..	..	..	8	..	16	59	..	1	..	..	..	..
27. Darlington Heights	66	1	..	..	..	..	..	..	5	..	122	29	..	23	..	..	..	..
28. Banister River	37	1	1	..	..	..	..	..	21	..	35	29	..	4	..	..	..	..
29. Lynchburg	25	..	..	..	..	..	..	..	13	..	1	36	..	..	..	..	..	..
30. Chatham	12	..	..	..	..	..	..	..	3	..	68	16	..	6	..	..	..	..
31. Danville	14	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..
32. Calmes Neck	32	..	..	..	..	..	..	..	..	2	..	34	..	2	..	..	..	..
33. N. Shenandoah Valley	168	..	6	..	..	..	..	..	1	12	..	63	..	10	..	..	..	..
34. Shenandoah NP-Luray	92	1	..	..	..	..	..	..	2	..	..	28	..	2	..	..	..	..
35. Big Flat Mountain	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..
36. Rockingham County	29	..	2	..	..	..	..	..	2	..	3	4	..	3	..	..	..	..
37. Augusta County	92	..	..	..	..	..	..	..	1	1	..	21	..	4	..	..	..	..
38. Waynesboro	19	..	..	..	1	..	..	..	9	..	10	47	..	5	..	..	..	..
39. Lexington	298	..	..	..	..	..	..	..	30	1	..	82	..	6	..	..	..	..
40. Peaks of Otter	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
41. Fincastle	92	..	..	..	..	..	..	..	17	..	4	35	..	2	..	..	..	..
42. Roanoke	13	..	..	..	..	..	..	..	1	..	1	6	..	..	..	..	..	..
43. Blacksburg	26	1	1	..	..	..	..	..	35	3	CW	46	..	2	..	..	..	..
44. Giles County	33	..	..	..	..	..	..	..	9	..	..	7	..	..	..	..	..	..
45. Tazewell	..	..	..	..	..	..	..	..	7	..	..	4	..	..	..	..	..	..
46. Mount Rogers-Whitetop	2	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..
47. Glade Spring	16	..	..	..	..	..	..	..	14	..	..	70	..	..	..	..	..	..
48. Blackford	54	..	..	..	..	..	..	..	11	..	20	10	..	2	..	..	..	..
49. Bristol	41	..	..	..	..	..	..	..	27	..	18	6	..	..	..	..	..	..
50. Buchanan County	3	..	..	..	..	..	..	..	11	..	..	..	..	..	..	..	..	..
51. Breaks Interstate Park	14	..	..	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..
52. Wise County	2	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..	..	..
Totals	10,171	83	71	4	1	9	1	2	945	92	1,595	1,412	10	733	29	18	33	18

Table 1. Number of Individuals of Each Species Seen (page 14 of 15)

SPECIES COUNT CIRCLE	Seaside Sparrow	Fox Sparrow	Song Sparrow	Lincoln's Sparrow	Swamp Sparrow	White-throated Sparrow	White-crowned Sparrow	sparrow sp.	Dark-eyed (Slate-colored) Junco	Lapland Longspur	Snow Bunting	Northern Cardinal	Painted Bunting	Dickcissel	Red-winged Blackbird
1. Chincoteague	1	2	189	...	105	399	...	...	...	...	1	122	...	...	1,734
2. Wachapreague	...	2	67	...	14	162	...	...	166	...	...	212	...	...	5,394
3. Nassawaddox	...	9	123	...	34	165	...	1	36	...	...	164	...	...	651
4. Cape Charles	8	58	250	...	151	351	...	...	100	3	...	250	...	...	1,297
5. Chesapeake Bay	1	...	...	...	...
6. Little Creek	...	5	79	...	6	255	...	...	...	...	...	112	1	...	394
7. Back Bay	...	4	93	...	31	120	...	...	...	...	...	89	1	...	4,357
8. Nansemond River	11	13	275	...	71	527	...	...	252	...	...	210	CW	...	2,542
9. Dismal Swamp	...	23	54	...	70	293	...	...	...	...	...	42	...	...	98
10. Newport News	...	1	99	...	22	255	...	...	80	...	...	223	1	...	434
11. Mathews County	...	23	117	...	13	222	...	...	568	...	...	270	...	...	2,024
12. Williamsburg	...	11	255	...	139	991	...	...	503	...	...	493	...	...	2,907
13. Hopewell	...	2	739	...	335	1,091	1	...	484	...	...	286	...	...	1,083
14. Walkerton	...	54	494	...	85	1,461	1	...	641	...	...	380	...	...	6,790
15. Washingtons Birthplace	...	4	251	...	65	433	7	...	149	...	...	140	...	...	572
16. Brooke	190	...	25	558	1	...	733	...	...	282	...	...	260
17. Fort Belvoir	...	23	1,444	...	248	4,035	1	...	2,681	...	...	1,533	...	...	1,816
18. Central Loudoun County	...	5	309	...	14	702	41	...	1,519	...	...	688	...	...	667
19. The Plains	...	2	557	...	50	837	23	...	1,801	...	...	527	...	...	52
20. Manassas-Bull Run	...	4	406	...	25	791	...	...	1,236	...	...	764	...	...	47
21. Nokesville	...	3	257	...	23	178	...	...	301	...	...	166	...	...	344
22. Chancellorsville	...	1	48	...	1	105	4	...	357	...	...	90	...	...	...
23. Lake Anna	...	2	43	...	1	188	2	...	881	...	...	164	...	...	2
24. Gordonsville	...	1	12	...	1	37	4	...	372	...	...	120	...	...	...
25. Charlottesville	...	6	291	...	17	642	49	...	529	...	...	310	...	...	...
26. Warren	...	2	351	...	15	720	124	...	580	...	...	257	...	...	8
27. Darlington Heights	...	6	93	...	16	268	9	...	757	1	...	306	...	...	8
28. Banister River	42	...	3	122	...	...	265	...	...	97	...	...	4
29. Lynchburg	...	1	99	...	8	379	4	...	604	...	...	431	...	...	...
30. Chatham	...	1	22	...	...	15	1	...	...	...	...	47	...	...	...
31. Danville	19	...	3	10	...	...	...	...	...	62	...	...	...
32. Calmes Neck	230	...	11	590	60	...	1,064	...	...	576	...	...	...
33. N. Shenandoah Valley	...	4	11	...	11	708	60	...	1,494	...	...	514	...	...	252
34. Shenandoah NP-Luray	...	1	99	...	3	168	50	...	406	1	...	118	...	...	42
35. Big Flat Mountain	8	...	...	76	...	...	101	...	...	19	...	...	...
36. Rockingham County	108	...	...	252	226	...	473	...	...	162	...	...	1,011
37. Augusta County	...	2	116	...	1	201	65	...	662	...	...	147	...	...	15
38. Waynesboro	219	2	23	326	78	...	976	...	...	175	...	1	1
39. Lexington	...	9	160	...	6	455	74	...	394	...	...	212	...	...	37
40. Peaks of Otter	7	...	...	3	...	...	143	...	...	13	...	...	...
41. Fincastle	...	2	67	...	1	107	20	...	213	...	...	106	...	...	36
42. Roanoke	...	2	88	...	...	57	...	...	...	...	...	101	...	...	...
43. Blacksburg	...	7	235	...	3	346	122	...	353	...	...	303	...	...	41
44. Giles County	...	3	61	...	...	69	...	...	113	...	...	81	...	...	...
45. Tazewell	...	2	40	...	3	36	36	...	...	...	...	19	...	...	...
46. Mount Rogers-Whitetop	...	1	45	...	...	6	...	...	...	...	...	28	...	...	...
47. Glade Spring	132	...	7	213	99	...	114	...	...	102	...	...	7
48. Blackford	...	1	88	...	2	59	92	...	44	...	...	57	...	...	...
49. Bristol	...	1	157	...	5	141	43	...	86	...	...	183	...	...	...
50. Buchanan County	33	...	...	22	...	...	41	...	...	54	...	...	...
51. Breaks Interstate Park	40	...	3	23	1	...	12	...	...	35	...	...	...
52. Wise County	...	1	40	...	...	29	...	...	48	...	...	63	...	...	20
Totals	20	304	9,252	2	1,670	20,199	1,298	1	22,800	5	2	11,905	3	1	34,947

Table 1. Number of Individuals of Each Species Seen (page 15 of 15)

SPECIES COUNT CIRCLE	Eastern Meadowlark	Rusty Blackbird	Brewer's Blackbird	Common Grackle	Boat-tailed Grackle	Brown-headed Cowbird	blackbird sp.	Baltimore Oriole	Purple Finch	House Finch	Common Redpoll	Pine Siskin	American Goldfinch	House Sparrow	Total species	Total individuals
1. Chincoteague	167	..	..	380	5	140	..	..	..	2	..	..	30	45	118	29,758
2. Wachapreague	62	..	..	7,303	50	2,261	2	..	..	27	..	4	74	23	107	43,904
3. Nassawaddox	127	..	..	..	..	2	50	..	..	15	..	..	109	35	107	16,932
4. Cape Charles	150	8	..	229	230	52	2	..	3	69	1	7	389	35	160	45,969
5. Chesapeake Bay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	9,939
6. Little Creek	1	1	..	908	82	27	..	..	1	57	..	..	131	4	123	38,671
7. Back Bay	21	8	..	3,135	..	270	..	..	..	15	..	15	56	3	129	27,240
8. Nansemond River	77	..	..	32	27	249	..	CW	..	89	..	..	141	52	136	32,479
9. Dismal Swamp	..	2	..	10	..	..	..	..	..	..	..	..	101	..	81	3,195
10. Newport News	19	..	..	169	13	11	300	..	2	102	..	6	94	106	127	19,210
11. Mathews County	84	..	..	438	..	154	..	..	1	57	..	..	62	36	106	17,405
12. Williamsburg	21	68	..	23	..	40	..	3	1	267	..	..	214	59	113	28,129
13. Hopewell	40	..	..	108	..	455	..	..	..	28	..	..	71	29	113	54,009
14. Walkerton	78	9	..	368	..	414	100	..	..	49	..	..	112	2	104	35,640
15. Washingtons Birthplace	31	1	1	322	..	35	85	..	..	8	..	3	129	42	95	27,859
16. Brooke	17	..	..	..	..	40	..	..	..	64	..	..	82	19	94	30,556
17. Fort Belvoir	9	63	..	182	..	23	..	..	1	259	..	..	332	886	110	99,225
18. Central Loudoun County	8	..	..	2	..	16	..	..	..	162	..	..	217	83	86	19,273
19. The Plains	44	..	..	CW	..	31	..	..	..	57	..	..	169	206	86	25,597
20. Manassas-Bull Run	2	130	..	30	..	..	28	..	..	175	..	..	246	204	83	24,110
21. Nokesville	2	5	..	2	..	4	..	..	..	18	..	..	88	23	71	9,346
22. Chancellorsville	15	..	..	30	..	..	..	..	..	32	..	..	5	13	71	3,318
23. Lake Anna	1	..	..	3	..	..	..	..	1	32	..	..	37	11	78	8,089
24. Gordonsville	66	..	..	..	..	20	..	..	..	2	..	..	20	1	62	3,858
25. Charlottesville	68	..	..	..	..	..	..	..	..	36	..	..	174	37	72	8,786
26. Warren	50	20	..	25	..	5	..	..	..	60	..	..	208	2	74	6,195
27. Darlington Heights	116	..	..	200	..	800	..	..	..	22	..	..	148	1	74	6,764
28. Banister River	33	..	..	275	..	..	..	..	CW	24	..	..	24	18	75	3,900
29. Lynchburg	3	..	..	..	..	..	..	..	1	112	..	..	139	33	75	8,216
30. Chatham	25	..	..	..	..	..	..	..	..	14	..	..	19	8	55	944
31. Danville	2	..	..	..	..	..	..	..	..	22	..	..	16	2	50	1,607
32. Calmes Neck	4	..	..	27	..	124	..	..	..	85	..	..	179	154	82	14,839
33. N. Shenandoah Valley	30	..	..	12	..	19	..	..	..	267	..	3	269	248	92	27,857
34. Shenandoah NP-Luray	34	..	..	1,011	..	..	..	..	2	75	..	..	170	45	83	11,102
35. Big Flat Mountain	..	..	..	..	..	..	..	..	..	..	..	..	21	..	31	479
36. Rockingham County	2	..	..	2,602	..	802	..	..	..	37	..	..	156	327	74	16,892
37. Augusta County	8	1	..	2	..	3	..	..	..	74	..	..	155	136	81	11,534
38. Waynesboro	37	..	..	6	..	2	..	..	3	50	..	CW	189	29	87	7,914
39. Lexington	12	50	..	266	..	130	250	..	17	75	..	..	219	13	80	18,755
40. Peaks of Otter	..	..	..	..	..	..	..	..	1	..	..	..	3	..	32	504
41. Fincastle	7	7	..	2	..	12	..	..	2	61	..	1	83	28	74	5,935
42. Roanoke	..	..	..	..	..	..	..	..	..	12	..	..	48	8	63	2,081
43. Blacksburg	22	1	..	..	..	..	..	..	2	91	..	..	185	27	83	8,566
44. Giles County	..	..	..	..	..	..	..	..	2	6	..	..	64	12	57	1,800
45. Tazewell	..	..	..	..	..	..	..	..	..	3	..	..	56	108	52	1,354
46. Mount Rogers-Whitetop	2	..	..	..	..	..	..	..	..	30	..	..	35	1	48	1,495
47. Glade Spring	11	..	..	24	..	..	..	..	..	15	..	..	89	31	71	7,236
48. Blackford	9	..	..	..	..	6	..	..	..	13	..	..	117	49	65	5,062
49. Bristol	24	..	..	..	..	..	..	..	..	43	..	..	89	33	78	11,439
50. Buchanan County	1	..	..	..	..	..	..	..	..	2	..	..	70	16	43	850
51. Breaks Interstate Park	3	..	..	..	..	..	..	..	1	8	..	..	19	..	43	1,096
52. Wise County	1	..	..	..	..	..	..	..	1	4	..	..	82	15	50	2,090
Totals	1,546	374	1	18,126	407	6,147	817	3	42	2,827	1	39	5,935	3,298	215	849,003

Table 2. Field, Collection and Meteorological Data (page 1 of 2)

COUNT CIRCLE	Count Date	Number of observers	Minimum Number of parties	Maximum Number of parties	Number of feeder observers	Hours at Feeders	Hours Nocturnal birding	Nocturnal miles	Hours on foot	Hours by car	Hours by motor boat	Hours by non-motor boat	Total party hours
1. Chincoteague	Dec 29	31	13	13	...	...	2.50	3.50	19.00	55.25	...	...	74.25
2. Wachapreague	Dec 14	22	10	10	1	1.00	...	...	23.00	46.00	5.00	...	74.00
3. Nassawadox	Dec 15	27	8	8	...	...	...	...	30.00	16.00	4.00	...	50.00
4. Cape Charles	Dec 30	51	9	21	...	...	3.00	10.00	96.00	26.00	4.00	...	126.00
5. Chesapeake Bay	Dec 26	3	1	1	...	...	...	...	7.00	1.00	...	...	8.00
6. Little Creek	Dec 31	25	10	20	...	...	1.75	6.50	91.00	3.50	4.50	...	99.00
7. Back Bay	Dec 29	27	13	18	...	...	2.50	16.00	76.00	10.50	3.50	...	90.00
8. Nansemond River	Jan 01	27	11	12	...	...	4.50	18.00	61.00	40.50	2.00	...	103.50
9. Dismal Swamp	Jan 04	15	6	6	...	...	...	...	14.00	24.00	...	...	38.00
10. Newport News	Dec 14	50	16	17	8	4.00	...	...	54.50	52.00	...	...	106.50
11. Mathews County	Jan 05	41	14	14	...	...	1.50	16.50	43.50	47.00	...	...	90.50
12. Williamsburg	Dec 15	74	10	24	34	44.25	2.00	13.50	111.50	66.00	0.50	1.00	179.00
13. Hopewell	Dec 15	41	15	15	...	...	7.75	38.50	48.50	44.75	2.00	...	95.25
14. Walkerton	Jan 05	26	1	9	...	...	5.25	47.50	43.00	31.50	4.50	...	79.00
15. Washingtons Birthplace	Dec 15	14	4	7	...	...	3.25	20.00	22.75	16.00	...	...	38.75
16. Brooke	Dec 16	28	10	14	...	...	...	...	64.50	44.00	...	...	108.50
17. Fort Belvoir	Jan 05	161	59	59	2	2.75	21.50	33.00	264.00	65.00	...	...	329.00
18. Central Loudoun County	Dec 29	85	55	31	2	4.00	...	...	62.50	92.00	...	...	154.50
19. The Plains	Dec 15	38	25	38	...	...	9.00	35.00	50.00	60.75	...	...	110.75
20. Manassas-Bull Run	Dec 15	119	34	34	1	2.00	3.00	3.00	138.75	45.00	...	...	183.75
21. Nokesville	Dec 29	33	2	8	1	0.50	...	...	29.00	15.50	...	...	44.50
22. Chancellorsville	Dec 29	19	6	6	1	8.00	...	...	18.00	34.00	...	...	52.00
23. Lake Anna	Jan 05	20	5	6	...	...	3.50	34.50	9.00	27.00	...	...	36.00
24. Gordonsville	Dec 15	18	6	6	1	1.00	...	...	16.00	28.00	...	...	44.00
25. Charlottesville	Dec 15	38	17	18	...	...	...	...	99.00	19.00	...	4.00	122.00
26. Warren	Dec 29	14	9	9	...	...	...	...	32.25	25.25	...	...	57.50
27. Darlington Heights	Jan 05	18	4	4	1	2.00	2.00	2.00	13.50	24.00	...	...	37.50
28. Banister River	Dec 22	7	4	4	3	4.25	3.25	15.00	16.50	17.25	...	...	33.75
29. Lynchburg	Dec 14	31	1	13	5	6.00	4.00	10.00	38.00	48.00	...	...	86.00
30. Chatham	Dec 29	7	5	7	5	5.00	1.00	0.00	1.00	9.50	...	...	10.50
31. Danville	Dec 28	7	5	5	4	3.50	...	...	9.00	14.00	...	...	23.00
32. Calmes Neck	Jan 05	51	1	19	6	30.00	10.25	38.50	33.00	75.50	...	...	108.50
33. N. Shenandoah Valley	Dec 14	40	16	16	1	5.00	3.00	9.50	74.50	79.50	...	7.00	161.00
34. Shenandoah NP-Luray	Dec 15	29	8	14	6	19.75	1.25	4.50	33.75	31.75	...	...	65.50
35. Big Flat Mountain	Dec 22	7	1	4	...	...	0.75	3.00	19.50	4.75	...	...	24.25
36. Rockingham County	Jan 04	32	1	11	3	4.25	1.75	15.00	7.75	61.50	...	...	69.25
37. Augusta County	Dec 15	26	8	8	3	3.00	2.50	5.00	10.50	51.50	...	...	62.00
38. Waynesboro	Jan 04	30	11	11	2	9.50	3.00	1.00	20.50	79.00	...	...	99.50
39. Lexington	Dec 21	40	4	18	4	3.00	2.00	15.00	41.25	31.50	...	...	72.75
40. Peaks of Otter	Dec 17	10	5	5	...	...	0.50	1.00	7.00	18.00	...	...	25.00
41. Fincastle	Dec 15	30	13	13	...	...	...	...	24.00	50.00	...	...	74.00
42. Roanoke	Dec 14	19	1	8	...	...	...	...	14.00	20.00	...	...	34.00
43. Blacksburg	Dec 14	14	13	14	12	14.00	8.25	28.00	39.25	36.75	...	...	76.00
44. Giles County	Dec 28	10	10	12	1	2.00	2.00	5.00	18.00	16.00	...	...	34.00
45. Tazewell	Dec 30	6	3	3	1	3.00	...	...	1.00	7.50	...	...	8.50
46. Mount Rogers-Whitetop	Dec 28	7	3	3	...	...	...	...	7.00	14.25	...	...	21.25
47. Glade Spring	Dec 14	16	7	7	...	...	4.25	18.50	13.50	41.25	...	...	54.75
48. Blackford	Dec 28	14	4	4	1	6.00	3.00	10.00	2.00	36.00	...	...	38.00
49. Bristol	Dec 29	17	8	8	...	...	2.50	24.00	20.50	41.00	...	...	61.50
50. Buchanan County	Dec 22	7	3	4	1	3.00	1.50	30.00	...	30.00	...	...	30.00
51. Breaks Interstate Park	Dec 21	7	7	7	2	1.00	1.00	0.00	6.00	14.00	...	...	20.00
52. Wise County	Dec 14	9	9	9	1	1.00	...	...	22.25	22.00	...	...	44.25
Totals:	...	1,538	524	655	113	192.75	126.25	527.00	2,017.00	1,810.00	30.00	12.00	3,869.00

Table 2. Field, Collection and Meteorological Data, page 2 of 2

COUNT CIRCLE	Miles on foot	Miles by car	Miles by motor boat	Miles by non-motor boat	Total party miles	Wind direction	Wind speed	Water conditions	a.m. skies	p.m. skies
1. Chincoteague	16.00	241.00	...	...	257.00	V	1-25	WOP	CLD, HLR	PCD, HLN
2. Wachapreague	6.00	321.00	12.00	...	339.00	NE	0-10	WOP	CLD, LGR	CLD, HVR
3. Nassawadox	21.00	176.00	20.00	...	217.00	NW	10-20	WOP	CLD, LGR	CLR
4. Cape Charles	69.00	199.00	20.00	...	288.00	W	0-3	WOP	CLR	CLD
5. Chesapeake Bay	0.50	2.00	...	...	2.50	W-NW	12-15	WOP	OVC, LGR	OVC
6. Little Creek	41.00	233.00	20.00	...	294.00	NE	10-20	WOP	CLD, LGR	CLR
7. Back Bay	21.00	445.00	12.00	...	478.00	V	5-35	WOP	CLD, HVR	CLD, HVR
8. Nansemond River	26.50	278.00	16.00	...	320.50	SW	0-6	WOP	CLD, LGR	CLD
9. Dismal Swamp	11.50	124.00	...	...	135.50	N	0-6	SFZ, MPF	CLD	CLR
10. Newport News	46.00	368.00	...	...	414.00	SE	0-21	WOP	FOG, LGR	CLD, LGR
11. Mathews County	32.50	347.50	...	...	380.00	S	5-25	WOP	CLD	CLD
12. Williamsburg	69.50	425.00	2.00	1.00	497.50	W	0-15	WOP	CLD, LGR	PCD
13. Hopewell	37.50	371.00	5.00	...	413.50	W	9-18	WOP	PCD	PCD
14. Walkerton	18.75	325.00	17.00	...	360.75	S	0-10	WOP	CLD	FOG, LNS
15. Washingtons Birthplace	6.00	194.50	...	...	200.50	NE	0-7	WOP	FOG	CLR
16. Brooke	34.00	179.50	...	...	214.50	E	0-5	SPF, MWO	CLD	CLD
17. Fort Belvoir	194.50	318.00	...	...	512.50	NE	5-10	SPF, MWO	CLD, LGR	CLD
18. Central Loudoun County	58.00	676.00	...	...	734.00	W	0-4	SPO, MWO	CLD, HVR	CLD, LGR
19. The Plains	39.50	458.00	...	...	497.50	V	3-5	SPO, MWU	PCD	CLR
20. Manassas-Bull Run	103.25	337.75	...	...	441.00	NW	6-20	WOP	PCD	CLR
21. Nokesville	23.75	25.50	...	...	49.25	NE	4-17	WOP	CLD, HVR	PCD, LGR
22. Chancellorsville	10.00	281.00	...	...	291.00	SW	0-5	WOP	FOG, HVR	CLD, LNR
23. Lake Anna	4.00	298.50	...	...	302.50	NW	1-3	SPF, MWO	CLD, LGR	CLD, LGR
24. Gordonsville	8.00	180.00	...	...	188.00	NE	5-15	WOP	PCR	PCR, LGR
25. Charlottesville	71.00	196.00	...	4.00	271.00	SW	7-10	WOP	CLR	CLD
26. Warren	29.50	206.00	...	...	235.50	CAL	...	WOP	CLD, HVR	PCD
27. Darlington Heights	6.00	191.00	...	...	197.00	NE	0-5	SPF, MWO	CLD	CLD
28. Banister River	9.75	144.00	...	...	153.75	V	8-14	WOP	CLD	CLD, HVR
29. Lynchburg	30.00	300.50	...	...	330.50	NE	0-15	SPF, MWO	CLD, LSN	CLD, HVR
30. Chatham	0.25	150.00	...	...	150.25	NW	5-14	WOP	CLD, HVR	PCD
31. Danville	8.50	207.00	...	...	215.50	SW	3-13	SPF, MWO	CLR	PCD, LGR
32. Calmes Neck	28.00	518.50	...	...	546.50	SE	0-15	SPF, MWO	CLD, LSR	FOG, HVR, LSN
33. N. Shenandoah Valley	61.50	603.00	...	6.50	671.00	NE	2-8	SPF, MWO	PCD, LGR	CLD, LSR
34. Shenandoah NP-Luray	27.75	248.00	...	...	275.75	NW	0-10	SPF, MWO	PCD	CLR
35. Big Flat Mountain	27.00	18.00	...	...	45.00	S	0-10	WOP	PCR, LGR	CLD, LGR
36. Rockingham County	5.50	426.00	...	...	431.50	S	8-15	SPO, MPF	CLR	CLD
37. Augusta County	10.25	497.50	...	...	507.75	V	1-4	WOP	PCD	CLR
38. Waynesboro	21.00	405.50	...	...	426.50	E	0-10	SFZ, MPF	CLR	CLR
39. Lexington	37.00	230.00	...	...	267.00	CAL	...	WNR	PCD	PCD
40. Peaks of Otter	9.00	49.00	...	...	58.00	W	5-10	WOP	PCD	PCD
41. Fincastle	9.00	199.00	...	...	208.00	NW	10-20	WOP	PCR	CLR
42. Roanoke	14.00	40.00	...	...	54.00	E	0-10	WOP	CLD, LGR	CLD, LGR
43. Blacksburg	41.50	251.00	...	...	292.50	E	0-8	WOP	CLD, LNR	CLD, HLN
44. Giles County	23.00	146.00	...	...	169.00	SE	5	WPO	OVC	PCR
45. Tazewell	3.00	101.00	...	...	104.00	CAL	...	WOP	CLD	CLD
46. Mount Rogers-Whitetop	11.25	173.00	...	...	184.25	V	0-5	SPF, MWO	PCD	CLD
47. Glade Spring	10.00	443.00	...	...	453.00	V	0-15	WOP	CLD, HVR	PCD, LGR
48. Blackford	3.75	295.00	...	...	298.75	NW	1-5	WOP	PCD	PCD
49. Bristol	9.50	390.00	...	...	399.50	SW	0-15	SPF, MWO	CLD, LGR	CLD, LGR
50. Buchanan County	...	271.50	...	...	271.50	E	5-15	WOP	CLD, HVR	CLD, LGR
51. Breaks Interstate Park	2.75	120.00	...	...	122.75	UNK	0-22	WOP	CLD, LNS	CLD, LGR
52. Wise County	20.00	276.00	...	...	296.00	CAL	...	WOP	CLD, HVR	CLD, LGR
Totals:	1,427.50	13,899.75	124.00	11.50	15,462.75	...	...	...	...	...

Table 3. Count Compilers and Sponsors

COUNT CIRCLE	Compiler	Compiler's email	Secondary Compiler	Sponsors & Organizations
1. Chincoteague	Kevin Holcomb	kevin_holcomb@fws.gov	Richard Roberts	Chincoteague: 1) NWR; 2) Nat Hist Assn
2. Wachapreague	Marilyn Ailes	imailes@verizon.net	Irvin Ailes	...
3. Nassawaddox	Henry Armistead	harryarmistead@hotmail.com	...	Coastal Virginia Wildlife Observatory
4. Cape Charles	Henry Armistead	harryarmistead@hotmail.com	...	Coastal Virginia Wildlife Observatory
5. Chesapeake Bay	Ned Brinkley	thalassoica@gmail.com	...	...
6. Little Creek	Paul Sykes	jjsykes@charter.net	Steve Holzman	Cape Henry Audubon Society
7. Back Bay	Paul Sykes	jjsykes@charter.net	Steve Holzman	Cape Henry Audubon Society
8. Nansemond River	Robert Ake	rake@cox.net	...	Cape Henry Audubon Society
9. Dismal Swamp	Donald Schwab	vacanebrake@yahoo.com	...	Great Dismal Swamp Coalition
10. Newport News	Nancy Gruttan-Tyler	gruttmantyler@gmail.com	...	Hampton Roads Bird Club
11. Mathews County	Don Mckelvey	donaldmckelvey@yahoo.com	Joyce McKelvey	...
12. Williamsburg	Bill Williams	billwilliams154@gmail.com	...	Williamsburg Bird Club
13. Hopewell	Arun Bose	arun1bose@gmail.com	...	Richmond Audubon Society
14. Walkerton	Frederick Atwood	fredatwood@yahoo.com	...	...
15. Washingtons Birthplace	William Portlock	portlock@bealenet.com	...	...
16. Brooke	Odette James	o.b.james@verizon.net	...	...
17. Fort Belvoir	Kurt Gaskill	kurtcapt87@verizon.net	...	One Good Tern
18. Central Loudoun County	Joseph Coleman	joecoleman@rstartmail.com	...	Loudoun Wildlife Conservancy
19. The Plains	Todd Day	blkvulture@aol.com	Perri Borowiecki	...
20. Manassas-Bull Run	Robert Shipman	ships333@yahoo.com	...	Audubon Society of Northern Virginia
21. Nokesville	Kim Hosen	khosen@pwconserve.org	...	Prince William Conservation Alliance
22. Chancellorsville	Beverly Smith	catbirds@verizon.net	...	Fredericksburg Bird Club
23. Lake Anna	Michael Boatwright	mboater@att.net	...	...
24. Gordonsville	Buzz Van Santvoord	vansantvoord@verizon.net	...	...
25. Charlottesville	Jennifer Gaden	jengaden@gmail.com	...	Monticello Bird Club
26. Warren	Allen Hale	super@buteobooks.com	...	Monticello Bird Club
27. Darlington Heights	Carolyn Wells	cwells@kinex.net	...	...
28. Banister River	Jeffrey C. Blalock	jcbabirder@gcronline.com	...	...
29. Lynchburg	Rexanne Bruno	bruno@lynchburg.edu	...	Lynchburg Bird Club
30. Chatham	Mary Foster	chathambirds08@hotmail.com	...	Southside Bird Club
31. Danville	Laura Meder	laura.meder@averett.edu	...	...
32. Calmes Neck	Margaret Wester	margaretwester@hotmail.com	...	Shenandoah Audubon
33. N. Shenandoah Valley	Charles Hagan	naturetrekr@gmail.com	Rob Simpson	Lord Fairfax Community College
34. Shenandoah NP-Luray	Alan Williams	j0u0n0k@embarqmail.com	...	...
35. Big Flat Mountain	Tom Wieboldt	thos.wieboldt@gmail.com	George Barlow	...
36. Rockingham County	William Benish	wcbenish@comcast.net	...	Rockingham County Bird Club
37. Augusta County	Allen Lerner	larnersky@mindspring.com	...	Augusta Bird Club
38. Waynesboro	Crista Cabe	cristacabe@gmail.com	...	Augusta Bird Club
39. Lexington	Dick Rowe	rowera@vmi.edu	...	...
40. Peaks of Otter	Barry Kinzie	peckerridge@ntelos.net	...	1) Woodpecker Nature Nature;
41. Fincastle	Barry Kinzie	peckerridge@ntelos.net	...	2) Walley Bird Club
42. Roanoke	William Hunley	wjhunley@gmail.com	...	...
43. Blacksburg	Patricia Polentz	polentz@va.net	Bruce Grimes	New River Valley Bird Club
44. Giles County	Bill Opengari	gramby@wildblue.net	...	...
45. Tazewell	Sarah Cromer	cromersml@gmail.com	...	...
46. Mount Rogers-Whitetop	Allen Boynton	allenboynton@hughes.net	...	Blue Ridge Birders
47. Glade Spring	Ronald Harrington	roneharrin@bvunet.net	...	Bristol Bird Club
48. Blackford	Robert Riggs	bob26@insight.rr.com	...	...
49. Bristol	Richard Lewis	mountainbirds@gmail.com	...	...
50. Buchanan County	Tom Hunter	opiehunter@yahoo.com	...	Buchanan County Bird Club
51. Breaks Interstate Park	Jayd Raines	jraines@breaksark.com	...	...
52. Wise County	Randy Stanley	randy_stanley@comcast.net	...	...

FIRST CONFIRMED NESTING OF THE NORTHERN GOSHAWK (*Accipiter gentilis*) IN VIRGINIA, WITH A REVIEW OF BREEDING SEASON RECORDS FROM THE CENTRAL AND SOUTHERN APPALACHIANS

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INTRODUCTION

In North America, the Northern Goshawk (*Accipiter gentilis*) breeds in mature and old-growth coniferous, deciduous, and mixed forests from Alaska southward through most of Canada and the western, north-central, and northeastern United States (Squires and Reynolds, 1997; American Ornithologists' Union, 1998; Bosakowski, 1999; Squires and Kennedy, 2006). In the eastern United States, the species' confirmed breeding range extends south into the central Appalachian Mountains of western Maryland (Brinker, 2010) and eastern West Virginia (Buckelew and Hall, 1994). Although nesting has been suspected since the 1970s in the high-elevation forests of western Virginia, eastern Tennessee, and western North Carolina (Simpson, 1992), confirmation of breeding in these states has not been documented.

The discovery of a Northern Goshawk nest with young in Virginia in June 2012 provides the first indisputable evidence of breeding by this species in the Appalachians south of the known West Virginia breeding locales. In this article I review the historical records of the Northern Goshawk from the central and southern Appalachians, provide documentation of the 2012 Virginia nest, and discuss the nesting ecology and breeding status of the species in this region.

Review of Breeding Season Records of the Northern Goshawk from the Central and Southern Appalachian Mountains

Before significant Euro-American settlement and deforestation began in the Appalachian Mountains during the 19th century, the Northern Goshawk could have been an uncommon permanent resident in the high-elevation primeval forests at least as far south as the Great Smoky Mountains in what are now eastern Tennessee and western North Carolina (Squires and Kennedy, 2006; Brinker and Boyle, 2010). Its breeding distribution in the southern Appalachians conceivably extended even farther south and west, into the higher mountains of present-day northern Georgia and eastern Kentucky. If this elusive hawk was already uncommon prior to the loss of much of its old-growth nesting habitat, its decline was probably rapid and the species could have gone undetected by the first ornithologists to visit the southern Appalachians in the late 1800s.

In addition to habitat loss and deliberate killing, the decline of the Northern Goshawk in the eastern United States during the first half of the 20th century (Squires and

Reynolds, 1997) may have been caused to some extent by the extinction of the Passenger Pigeon (*Ectopistes migratorius*), an important prey species (e.g., Bent, 1937; Todd, 1940; Hoover, 2003; Squires and Kennedy, 2006). The Passenger Pigeon nested irregularly in immense numbers as far south as Kentucky (Mengel, 1965), the western mountains of Virginia (Simpson, 1976), and even Georgia on occasion (Schorger, 1955). Its winter range in the eastern United States extended south to Florida (Schorger, 1955; American Ornithologists' Union, 1998).

In the central Appalachian Mountains of Maryland and West Virginia, Northern Goshawks are rare breeders and have been observed commencing pair bonding and courtship activities during February; courtship and nest-building may continue through March, with egg-laying usually beginning no later than about 10 April (Brinker, 2010; D.F. Brinker pers. comm.). The species also occurs as a rare transient and winter resident in the southeastern United States, especially during irruptive years (Squires and Reynolds, 1997; Squires and Kennedy, 2006). Individuals observed in late winter or late summer in the southern Appalachians are, therefore, probably transients or vagrants. Although these birds may be local residents, unless courtship behaviors or nesting are observed, only those well-documented sightings made at high-elevations and in heavily forested habitats between about April and August should be considered as evidence of possible breeding. Some April and August reports from the mountains are thus included in the following summary of breeding season records from the central and southern Appalachian states, as these are judged to represent individuals potentially on or near breeding territories. None of the reports gathered from the literature has mentioned the approximate elevations at which the birds were observed. In the reports that follow, I have estimated elevations (in parentheses) whenever possible.

Maryland

The Northern Goshawk is a rare breeding resident in the mountains of Garrett County (and probably Allegheny County) in western Maryland (Brinker, 2010). According to Behr (1914), a pair nested near Jennings (ca. 700 m) in 1901 but were shot by a local. Behr noted that goshawks had disappeared as breeders in that area since the cutting of the spruce and hemlock forest. The species was not found nesting in Garrett County again until 1980 (Boone, 1984; Boone, 1996). Brinker (2010) summarized all additional nesting records from Maryland through 2006.

An unsuccessful nesting in 2011 was also documented in Garrett County (D. F. Brinker pers. comm.).

West Virginia

Hall (1983) described the Northern Goshawk as an accidental or casual summer resident in West Virginia. He noted that one was collected near Glady (ca. 870 m) in Randolph County by J. Rhodes on 18 April 1951 and that S. S. Dickey took sets of eggs from nests found near Bemis (ca. 790 m) in Randolph County in 1951 and 1959. Hall further noted that goshawks were reported from the Canaan Valley (ca. 975 m) in Tucker County in June 1956 (by T. Shields) and May 1972, and that a nest was found in the Canaan Valley in May 1975 by J. Rawson and R. Hall.

A summer sighting was made in southern Pocahontas County in 1987 (Buckelew, 1994) and Buckelew (1991) provided a documentary report of three active goshawk nests located in West Virginia in 1989 and 1990: The first was found by B. Tolin on 1 May 1989. It was 9.1 m up in a black birch (*Betula lenta*) near the head of the Little River (ca. 870 m) in Pocahontas County. The contents of the nest were undetermined, but the adults were behaving aggressively both on this date and when Tolin returned on 18 May, suggesting the presence of nestlings. Tolin observed that the nest was reused in 1990 and that aggressive adults were again present at the site in 1991. Buckelew remarked that Tolin had heard goshawks at this locale for a number of years prior to 1989. The second nest was found on 30 April 1990 by L. Smith northeast of Davis (ca. 945 m) in Tucker County. It was placed 10.7 m up in a large sugar maple (*Acer saccharum*) and contained at least one nestling. Smith observed one near-fledging young in the nest when she returned on 6 June. D. Mitchell and B. Roody found the third nest on 29 June 1990 south of Cheat Bridge (ca. 1085 m) in the Mower Tract of the Monongahela National Forest in Pocahontas County. This nest was 13 m up in an American beech (*Fagus grandifolia*) and its contents were undetermined. Later that summer, on 16 July, what was presumed to be a young goshawk was heard in the vicinity. Mitchell also reported having seen goshawks on 20 and 21 June 1990 about 7 km north of the Mower Tract. In addition, C. Stihler and J. Wallace informed Buckelew (1991) of their having seen two adult and two immature goshawks on Lambert Run (ca. 1090 m) in Randolph County in August 1990.

Since 1991, several additional goshawk nests have been located in Pocahontas, Randolph, Tucker, and Webster counties in West Virginia, the most recent in 2007 (D. F. Brinker, pers. comm.).

Virginia

Throughout Virginia this species is considered a rare and irregular fall migrant and winter visitor and a very rare spring migrant; in the western mountains it is also a rare summer visitor (Rottenborn and Brinkley, 2007). Spring and summer goshawk records suggestive of possible breeding individuals have been reported only from Highland County, Tazewell County, Grayson and/or Smyth County, Montgomery County, and Giles County.

In Highland County, one bird was seen on 26 May 1986 at Locust Springs (ca. 1125 m) and another on 18 June 1990 on Middle Mountain (ca. 1190 m), about 5 km east of Locust Springs (Webb, 2005; Rottenborn and Brinkley, 2007). Both locales are within the George Washington National Forest. On 21 June 1986, T. F. Wieboldt, A. D. Wieboldt, and C. M. Stevens observed a large *Accipiter*, almost certainly a goshawk, at the western end of Ward Cove (ca. 1000 m) in Tazewell County (T. F. Wieboldt pers. comm.). One adult and one sub-adult were sighted on Mount Rogers on 27 June 1992 (Rottenborn and Brinkley, 2007). Mount Rogers (summit elevation 1746 m) lies in both Grayson and Smyth counties, so it is unclear where on the mountain this observation was made. Murray (1974) reported that R. V. Dietrich observed a goshawk in August 1952 somewhere in Montgomery County, but gave no details.

The remaining breeding season records of Northern Goshawks in Virginia have all come from Salt Pond Mountain in Giles County. Johnston (2000) listed only one record of the Northern Goshawk in this region, that being an adult seen in old-growth mixed forest along Pond Drain Creek (elevation ca. 1095 m) on 11 May 1994 by C. W. S. Ziegenfus. However, in addition to this sighting, C. S. Adkisson, R. N. Conner, and J. W. Via observed an immature in the late spring or early summer of circa 1975 along Little Stony Creek at the base of Salt Pond Mountain around an elevation of 945 m (C. S. Adkisson, pers. comm.). In August 2002, J. W. Via saw an immature hunting in woods above Mountain Lake near the summit of Salt Pond Mountain (ca. 1220 m) (J. W. Via pers. comm.). Finally, on 14 August 2003, I observed what was likely a Northern Goshawk along Little Stony Creek in old-growth forest dominated by eastern white pine (*Pinus strobus*) about 60 m from the site where in 2012 I found the goshawk nest reported here. I first saw a nearly full-grown juvenile Wild Turkey (*Meleagris gallopavo*) fly suddenly from the ground and alight near the top of a tall white pine. The turkey stood motionless on an upper branch for about 10 minutes until I began walking toward it. When it flushed, I saw a very large *Accipiter* fly after it through the trees. Crossing a clearing, the two birds dove into the top of a white pine. From a distance of about 45 m, I heard wings beating against the branches and a shriek from the turkey. When I reached the base of the pine shortly thereafter, both the turkey and hawk were gone. The hawk certainly seemed large enough to have been a Northern Goshawk, which is the only *Accipiter* in North America known to take prey close to the size of an adult Wild Turkey (Golet et al., 2003).

Tennessee

Robinson (1990) described the Northern Goshawk as an irregular, rare migrant and winter resident, and a very rare summer visitor in Tennessee, most frequently observed in the eastern part of the state. Knight (1990) also considered the species irregular in its occurrence, with most sightings reported from the mountains. The first breeding season record for Tennessee was a bird seen on 18 June 1971 at Indian Gap (ca. 1500 m) on the Sevier County, Tennessee-Swain

County, North Carolina line by G. R. Austing (Alsop, 1971). Indian Gap is located within the Great Smoky Mountains National Park. R. A. Phillips (1979) and T. F. Laughlin observed an adult on Roan Mountain (summit elevation 1916 m) along the Carter County, Tennessee-Mitchell County, North Carolina border on 29 August 1977. J. C. Haney (1981) described observing an adult goshawk on 11 April 1981 about one-half mile east of Newfound Gap (1539 m) in the Great Smoky Mountains National Park, near the boundary of Sevier County, Tennessee and Swain County, North Carolina. He also noted that there was an unpublished record of a goshawk sighting in the Great Smoky Mountains from June 1976 (?) on file at the Park Headquarters. Knight (2010) cited two additional late summer records from Roan Mountain, one on 13 August 1981 and 15 August 1988. A single individual was also seen on Roan Mountain on 1 June 1991 by F. J. Alsop III (Knight, 2008).

North Carolina

The breeding status of the Northern Goshawk in North Carolina remains uncertain. Potter et al. (1980) called it a rare permanent resident in the mountains and a very rare transient elsewhere. Knight (1990) concluded that the species is at least an occasional, irregular visitor, with sightings throughout the year, mostly in the mountains. The first breeding season record, and only the second record for the state, was a single adult observed in flight on 15 June 1970 by D. H. Pratt and others at the Heintooga Overlook on Balsam Mountain (ca. 1585 m) in Swain County in the Great Smoky Mountains National Park (Pratt, 1971). On 3 July 1970, from Alexander's View on the Heintooga-Round Bottom Road, Pratt saw what was probably a goshawk soaring in the distance. The location was about 5 km north of the Heintooga Overlook (Pratt, 1971) and still within the park.

Hader (1975) summarized D. Frank's observations of what were likely Northern Goshawks at Cranberry (ca. 950 m) in Avery County during the summer of 1971. Frank's descriptions indicated the presence of several large hawks, or "silver eagles," hunting near her home in June 1971. According to Frank, she had observed at least one adult with several young in June and as many as six birds by mid-August. From her descriptions, Hader was convinced they were goshawks. Lee (1985) interviewed D. Frank in 1975 and 1976. She informed him that the hawks had nested again near her home, apparently in 1973 or 1974, and that three young were raised. Lee also included Frank's drawing of one of the hawks in his report. Her sketch and the accompanying notes she provided in the margins depict the plumage as most likely that of an adult Northern Goshawk.

On 3 April 1976, M. Tove (1979) saw an adult goshawk flying along a ridge in the Shining Rock Wilderness (ca. 1675 m) in Haywood County. The bird had flown from a forested area with a heavy growth of red spruce (*Picea rubens*) and hemlock (*Tsuga* sp.). On 16 July 1985, D. S. Lee (1985) saw what was probably a goshawk being mobbed by crows on Grandfather Mountain (summit elevation 1812 m), which stands in Avery, Caldwell, and Watauga counties.

DESCRIPTION OF THE 2012 GILES COUNTY, VIRGINIA NEST SITE

On 26 June 2012, I found an active Northern Goshawk nest in a remote section of Giles County, Virginia, between Salt Pond and Big mountains at an elevation of 957 m. The large, stick nest was 18.3 m from the ground and approximately 9 m from the top of an eastern white pine with a 46.5 cm diameter at breast height (dbh), decreasing to about 30 cm at nest height. It was placed on the west side of the tree against the trunk and supported by three dead branch stubs measuring about 5 to 6 cm in diameter and no longer than approximately 3 m. From the level of the nest down to its base, the tree's remaining branches were mostly dead and broken, averaging about 0.5 m in length and covered with lichens. There was one living branch near the nest about 1 m long. Starting less than 1 m above the nest, the tree had many living branches with abundant foliage.

The nest tree stood on extensive level ground in an old-growth mixed forest dominated for several surrounding hectares by eastern white pine. Other canopy trees in the immediate vicinity of the nest included black cherry (*Prunus serotina*), red maple (*A. rubrum*), scarlet oak (*Quercus coccinea*), and white oak (*Q. alba*). The largest pines nearby were approximately 25 to 30 m tall and up to 65 cm dbh. Four black cherries, the closest surrounding hardwoods, were each about the same height as the nest tree with dbh of 30 to 35 cm. The larger trees around the nest tree were generally widely spaced, the closest pines being 3 to 5 m away. There were also a few dead white pine snags in the vicinity. In the subcanopy there were several downy serviceberries (*Amelanchier arborea*) and young eastern hemlocks (*T. canadensis*) nearby, all between 3 and 4 m tall. The understory was dominated for some distance by white pine saplings averaging about 1 m tall, the tallest about 3 m in height. These were growing mostly in small clumps or in some cases rather dense stands. The ground around the base of the nest tree was fairly open except for some short white pines saplings, a number of clubmosses (*Lycopodium* spp.), ferns, and northern shorthusk grass (*Brachyelytrum aristosum*).

The nest site was located in the floor of a valley drained by Little Stony Creek. The area around the nest, thought to encompass much of the goshawk pair's home range (a distance of perhaps 1 km outward in all directions), may be categorized into four major forest types: The first was the old-growth white pine-hemlock forest that was dominated by eastern white pine and eastern hemlock. The nest tree was located in this community. Many of the larger trees here were 25 to 30 m tall and nearly 90 cm dbh. Other important canopy trees included mature black birch, yellow birch (*B. lutea*), American beech, white oak, black cherry, red maple, black gum (*Nyssa sylvatica*), and white ash (*Fraxinus americana*). Northern red oak (*Q. rubra*), black oak (*Q. velutina*), white basswood (*Tilia heterophylla*), and a few red spruce were also present. The relatively open subcanopy consisted primarily of rosebay rhododendron (*Rhododendron*

maximum) and mountain laurel (*Kalmia latifolia*), followed by witch-hazel (*Hamamelis virginiana*), downy serviceberry, flame azalea (*Rhododendron calendulaceum*), striped maple (*A. pennsylvanicum*), flowering dogwood (*Cornus florida*), huckleberries (*Gaylussacia* spp.), blueberries (*Vaccinium* spp.), American chestnut (*Castanea dentata*), greenbrier (*Smilax* sp.), hawthorns (*Crataegus* spp.), American holly (*Ilex opaca*), sweet crabapple (*Malus coronaria*), and numerous saplings of the canopy species, especially white pine. The ground was covered with leaf litter, fallen branches, mosses, grasses, clubmosses, and dense patches of ferns. In boggy ground, sedges (*Carex* spp.) and skunk cabbage (*Symplocarups foetidus*) were abundant. Most of the forest appeared to have been undisturbed, although there was evidence of past selective cutting.

The spruce-hemlock-pine bog community occurred in isolated sections of the valley. Along the creek in the valley floor there stood several open bogs. The largest of these bogs was approximately 0.2 km from the nest site and occurred in a narrow corridor between woods bordering Little Stony Creek and the wooded slopes at the base of Big Mountain. The bog's greatest width was perhaps 60 m and occupied an area of roughly 2 ha. Scattered throughout this and other bogs were pools of standing water—the result of American beaver (*Castor canadensis*) damming activities. Trees standing around these bogs were mature eastern hemlock, red spruce, eastern white pine, pitch pine (*P. rigida*), black birch, yellow birch, white oak, red maple, black gum, and dead snags. Dense thickets of tall rosebay rhododendron and mountain laurel were present around others, sometimes mixed with brookside alder, witch-hazel, mountain holly (*Ilex montana*), highbush blueberry (*V. corymbosum*), greenbrier, and hawthorn. Many conifers, especially spruce and hemlock, extended into the bogs and sometimes formed small stands or islands. The most prominent shrubby vegetation in the bogs consisted of glade St. John's-wort (*Hypericum densiflorum*), steeplebush (*Spirea tomentosa*), briars (*Rubus* spp.), and a few small willows (*Salix* sp.). The central portions were covered with mosses (including *Sphagnum* spp.) and diverse herbaceous vegetation—primarily sedges, skunk cabbage, American burreed (*Sparganium americanum*) and ferns. Other plants included rushes (*Juncus* spp.), grass of Parnassus (*Parnassia asarifolia*), clubmosses, sundew (*Drosera rotundifolia*), cottongrass (*Eriophorum virginicum*), Canada lily (*Lilium canadense*), and various grasses.

The two dominating trees in the hemlock-spruce forest type were eastern hemlock and red spruce. The average hemlock dbh was about 65 cm, while the average spruce dbh was around 45 cm. Both species reached heights of 27 or 30 m. Other important trees were old-growth eastern white pine, pitch pine, black birch, and yellow birch. Large tulip poplars (*Liriodendron tulipifera*) and oaks were also present. The often dense and almost impenetrable understory was a widespread tangle of rosebay rhododendron mixed with mountain laurel, witch-hazel, mountain holly, striped

maple, and canopy-tree saplings. Many rhododendrons and laurels grew to heights of 7 to 9 m, with most averaging 3 m tall. Ferns, mosses, and liverworts were common in damp places, often covering fallen stubs and branches. This climax forest began about 0.5 km east of the nest site and showed no evidence of human disturbance.

The transitional mixed hardwood-hemlock-white pine forest type was present starting from about 0.5 km north and south of the nest site, covering much of the lower mountain slopes. Canopy trees in this community were generally medium-sized white oak, chestnut oak (*Q. prinus*), black cherry, black locust (*Robinia pseudo-acacia*), red maple, and sugar maple. White pine, bigtooth aspen (*Populus grandidentata*), hickories (*Carya* spp.), American beech, cucumber tree (*Magnolia accuminata*), tulip poplar, scarlet oak, white basswood, and white ash occurred sparingly. The canopy ranged from 18 to 24 m tall. Predominant in the understory were ericaceous shrubs, including rosebay rhododendron and mountain laurel, although American chestnut, witch-hazel, downy serviceberry, striped maple, black gum, sourwood (*Oxydendrum arboreum*), and flowering dogwood were common, as well, along with blueberries, huckleberries, and saplings of the canopy species. Herbs included various ferns (most frequently cinnamon, *Osmunda cinnamomea*, and hay-scented ferns, *Dennstaedtia punctilobula*), grasses, and violets (*Viola* spp.).

NESTING OBSERVATIONS (JUNE-JULY 2012)

About 12:30 EDT on 26 June 2012, while walking through the woods along Little Stony Creek, I began hearing very loud *kak-kak-kak* calls coming from the mid-canopy level a short distance away. I immediately identified the calls as those of an agitated hawk, probably an *Accipiter*, but they were louder and harsher than the calls of Cooper's (*Accipiter cooperii*) or Sharp-shinned (*Accipiter striatus*) hawks. Suddenly the hawk swooped down with great speed and nearly struck my head before I ducked to the ground. The bird continued to call with great anxiety, and when it perched in a nearby pine I identified it as an adult Northern Goshawk. Its large size, blue-gray back, pale gray breast with fine barring, black crown and eye stripe, and long, banded tail were distinctive. The hawk dove fiercely several more times before I was able to locate the nest. In the nest I could easily see one young bird standing motionless, a second perched on a branch immediately above it, and a third perched on a branch about 1 m farther up, also near the trunk. I then realized I had been about 10 m from the nest tree when the adult started calling.

The young were quite well-developed, their plumage characteristics closely matching those described for young aged 32 to 34 days post-hatching (Squires and Reynolds, 1997). Feathers had begun to emerge on their heads. Their wings and backs were almost fully-feathered and the tail feathers of the two young perched outside the nest seemed about two-thirds adult length. The flank and breast feathers on all the young were white with dark streaks, their upper

breast area in particular showing a coppery tan wash. They still had a few small tufts of natal down loosely interspersed among their new feathers, especially in the upper breast region. Squires and Reynolds (1997) noted that young begin to move to nearby branches around 34 to 35 days post-hatching.

Due to the adult's aggressive behavior, I was able to observe the young for only a few minutes. Meanwhile the adult continued to call loudly from perches as low as 8 or 10 m off the ground, sometimes almost directly overhead. About every 30 seconds it would dive at me, narrowly missing me several times before I ducked. As I retreated from the nest site, the adult followed, continuing to dive at me. However, at a distance of approximately 120 m from the nest, it finally relented and disappeared, presumably returning to the young. I did not observe the bird's mate.

I returned to the nest site on 27 June around 17:00 EDT, this time accompanied by Bruce Grimes and Thomas F. Wieboldt. When we were still 90 m from the nest, an adult flew in and began calling loudly, giving the same vocalization as before. It first landed in the top branches of a tall white pine and then flew off high through the woods in the direction of the nest, calling in flight. We reached a point about 30 m from the nest tree and from there Bruce Grimes took photographs of the young, two of which were sitting together in the nest; the third was perched on a dead branch beside it (Figures 1, 2). We were present at the nest site for about 15 minutes. During this time only one adult was observed and photographed (Figure 3). The bird did not attempt to attack but was nervous and called repeatedly from high perches in trees generally 10 to 50 m from the nest. Meanwhile the young remained relatively motionless, although the two birds in the nest were noted shifting around slightly. At least one of the young also gave a soft *kak-kak-kak* call several times.

I made a final visit to the nest site on 6 July. Due to time constraints and the possibility of bad weather I was able to stay only briefly. The nest was vacated but appeared in good condition, even though a derecho storm with high winds had passed through the area on 29 June. I first searched the ground carefully for several meters around the nest tree. At the base of the tree I found the bones and bits of fur of what appeared to be a red squirrel (*Tamiasciurus hudsonicus*). I also found three juvenal contour feathers from either an American Crow (*Corvus brachyrhynchos*) or Common Raven (*Corvus corax*). The feathers seemed to have been developing at the bird's death, as they still had their sheaths. Two were rectrices measuring 13 and 16 cm; the third was a probable secondary 11.5 cm in length. Near the feathers was a clump of several bird bones, including a sternum 9.5 cm long. After inspecting these remains, I made a search of the woods in the vicinity. About 25 m from the nest tree I flushed a single fledgling goshawk from its perch in an eastern hemlock about 6 m off the ground. It was alert and immediately flew 15 m to an oak, then off to other trees a short distance away as I approached it slowly. The fledgling remained in the mid-canopy level

and also called *kak-kak-kak* several times, nearly as loud as an adult. This confirmed that at least one of the three young fledged successfully. Northern Goshawk nestlings are known to leave the nest tree between 35 and 42 days of age and generally stay within 300 m of the nest site for about 25 days, during which time they depend on their parents for food (Squires and Reynolds, 1997). During the approximately 20-minute period I was present at the site I neither saw nor heard an adult. Presumably the adult(s) were off hunting or attending the other fledglings at the time I made these observations.

The mean incubation period of this species lasts 33 days, with a reported range of 28 to 38 days (Squires and Reynolds, 1997). If the oldest nestling was about 35 days old on 26 June, egg-laying may have begun as early as 15 April and as late as 25 April, but probably began about 20 April. The young would have hatched around 23 May.

OBSERVATIONS IN 2013

In 2013, I visited the goshawk territory on 11 March in hopes of observing courtship or nesting activities around the 2012 nest site. I reached a point 300 m from the nest tree at 07:15 EDT, about fifteen minutes before sunrise. It was mostly cloudy, about 2° C, and rather windy. Between 07:30 and 08:00, I observed a pair of courting Red-shouldered Hawks (*Buteo lineatus*) giving loud calls and making short circling flights above the treetops. At 09:00, having observed no goshawks, I began slowly making my way toward the 2012 nest tree. At 09:05, from a distance of about 30 m from the tree, I stepped on a dry stick and it cracked loudly. Almost immediately I heard a single *kak-kak-kak* and from the mid-canopy near the old nest tree a goshawk flew upward in my direction and landed on a branch about 24 m up in a tall white pine with little foliage. I stood motionless for at least three minutes, during which time the hawk seemed rather anxious, but eventually it defecated and shuffled its feathers, suggesting it was not particularly alarmed at my presence. Not long after defecating it flew back into the darker white pine woods from whence it came, and I could see it land silently in a tree very near the old nest tree. Unfortunately I could not tell for certain if the bird was in adult plumage. The light was poor, the sky being overcast, and I could not use my binoculars when the bird was close because raising my arms might have startled it. However, its breast was definitely very light and I could see that its head was dark—probably with an eyestripe. The bird was most likely an adult.

After the goshawk had flown back toward the nest tree, I retreated 90 m and waited. At 10:30, having heard nothing, I left this point and made my way back toward the old nest. At 11:50, a Barred Owl (*Strix varia*) called once from somewhere very near the nest tree. I then began to carefully approach the tree myself. From a distance of about 60 m I spotted the nest. There appeared to be no fresh greenery on the nest, yet it seemed to have a few fresh sticks placed upon it. When I left the site at 12:15, I had neither seen nor



FIGURE 1. The nest and three young on 27 June 2012. Two young are in the nest and one is perched on a branch beside the trunk. (Photo by Bruce Grimes.)



FIGURE 2. Young Northern Goshawk, approximately 35 days old, perched beside the nest on 27 June 2012. This is the same bird visible in Figure 1 perched to the right of the trunk. (Photo by Bruce Grimes.)



FIGURE 3. Adult Northern Goshawk perched in an eastern white pine near the nest tree on 27 June 2012. This was the single adult observed at the nest site on that date. (Photo by Bruce Grimes.)

heard any goshawks since my observation at 09:05.

I returned to the goshawk territory before dawn on 23 March. When I arrived at a point 120 m from the nest tree it was about -1.0° C, partly cloudy, calm, and there was a quarter to half an inch of snow on the ground. I again observed a pair of Red-shouldered Hawks calling and flying around the goshawk territory. However, during the time I spent at this point and several other places in the woods around the nest tree before leaving at 11:00, I neither saw nor heard any goshawks. When I checked the 2012 nest at close range I could see clearly that it had been refurbished slightly. The structure nevertheless had an appearance of being incomplete. The new sticks, which were somewhat fresher looking than the matted-down sticks of 2012, were woven only loosely together and seemed to be sitting somewhat disheveled. All appeared to be old white pine sticks. I could also see light between them and even snow in the nest proper.

David F. Brinker and I visited the territory together on the afternoon of 7 April, but again observed no goshawks during the several hours we spent carefully walking over

the area. The old nest did not appear to have any additional sticks on it and actually seemed more disheveled than it had on 23 March. Although we noted several other large stick nests in trees in the vicinity, they all appeared old and dilapidated.

I made a final visit to the territory on 28 May. During the time I spent near the 2012 nest I observed no goshawks. The old nest was in poor condition and obviously abandoned by this time. It is therefore certain that a pair did not reuse the nest in 2013 and probably did not nest in its immediate vicinity, although nesting may still have occurred somewhere in the area. Possibly the bird present on 11 March was the female attempting to attract a male to the territory.

DISCUSSION

The 2012 Giles County nest site now marks the southernmost confirmed breeding locale of the Northern Goshawk in eastern North America, approximately 100 km southwest of the nesting sites documented in West Virginia. The successful fledging of at least one young from the nest is cause for optimism. The status of this species as

a breeding resident in Virginia and throughout the central and southern Appalachian Mountains is uncertain, with recent evidence suggesting that goshawks may be declining (Brinker and Boyle, 2010). It seems likely, however, that nesting has occurred in the Salt Pond Mountain area of Giles County for a number of years, and probably elsewhere in the higher mountains of western Virginia where similar habitat conditions are present. Nesting apparently did not take place at the Giles County locale in 2013, at least on the territory used in 2012. Yet with the continued protection of suitable habitat, there remains hope that nesting will again occur at some time in the future.

Northern Goshawks are secretive birds and are not particularly vocal except during their early morning courtship displays in late winter and when defending their nests from predators. In the Appalachians, the species requires relatively secluded, extensively forested tracts of land with conifers and large trees for nesting. Because they are rare and difficult to detect, goshawks observed in suitable old-growth habitats even as early as February might be potential breeders. Continued searching and monitoring will help ensure that the central and southern Appalachian breeding populations of this magnificent raptor are identified and protected.

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LITERATURE CITED

- Alsop, F. J., III. 1971. The Season: Eastern mountain region. *Migrant* 42: 72.
- American Ornithologists' Union. 1998. Check-list of North American birds. Seventh edition. American Ornithologists' Union, Washington, D.C. 829 pp.
- Behr, H. 1914. Some breeding birds of Garrett Co., Md. *Auk* 31: 584.
- Bent, A. C. 1937. Eastern goshawk (*Astur atricapillus atricapillus*). Pp. 125-139 *In* Life Histories of North American Birds of Prey. U.S. National Museum Bulletin 167.
- Boone, D. D. 1984. First confirmed nesting of a goshawk in Maryland. *Wilson Bulletin* 96:129.
- Boone, D. D. 1996. Northern Goshawk (*Accipiter gentilis*). Pp. 102-103 *In* Robbins, C. S. and E. A. T. Blom (editors). Atlas of the Breeding Birds of Maryland and the District of Columbia. University of Pittsburgh Press, Pittsburgh, PA. 479 pp.
- Bosakowski, T. 1999. The Northern Goshawk: Ecology, Behavior, and Management in North America. Hancock House, Blaine, WA. 80 pp.
- Brinker, D. F. 2010. Northern Goshawk (*Accipiter gentilis*). Pp. 110-111 *In* Ellison, W. G. (editor). 2nd Atlas of the Breeding Birds of Maryland and the District of Columbia. Johns Hopkins University Press, Baltimore, MD. 494 pp.
- Brinker, D. F. and K. P. Boyle. 2010. Status and conservation of Northern Goshawks in the central Appalachian Mountains: Has the population trend reversed since 2001? Pg. 204 *In* Rentch, J. S., T. M. Schuler (editors). Proceedings from the Conference on the Ecology and Management of High-Elevation Forests in the Central and Southern Appalachians, 14-15 May 2009; Slatyfork, WV General Technical Report NRS-P-64. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 242 p.
- Buckelew, A. R. Jr. 1991. Recent Northern Goshawk breeding records from the West Virginia highlands. *Redstart* 58: 74-75.
- Buckelew, A. R., Jr. and G. A. Hall. 1994. The West Virginia Breeding Bird Atlas. University of Pittsburgh Press, Pittsburgh, PA. 215 pp.
- Golet, G. H., H. T. Golet, & A. M. Colton. 2003. Immature Northern Goshawk captures, kills, and feeds on adult-sized Wild Turkey. *Journal of Raptor Research* 37: 337-340.
- Hader, R. J. 1975. Goshawks in Avery County, N.C. *Chat* 39: 18-19.
- Hall, G. A. 1983. West Virginia Birds. Pittsburgh: Carnegie Museum of Natural History, Special Publication No. 7. 180 pp.
- Haney, J. C. 1981. Goshawk from Great Smoky Mountains National Park. *Migrant* 52: 91.
- Hoover, W. N. 2003. Grass Flats: Birds of Warren County, Pennsylvania, Including Notes on Other Species Observed at Presque Isle, Erie County, Pennsylvania, From the 1890-1923 Journals of the Naturalist, Ralph Bernard Simpson. iUniverse, Inc., Lincoln, NE. 257 pp.
- Johnston, D. W. 2000. Mountain Lake and Its Bird Life. Virginia Museum of Natural History, Martinsville, VA. 90 pp.
- Knight, R. L. 1990. Northern Goshawk at Roan Mountain, Tennessee and North Carolina, with comments on its status in these two states. *Chat* 54: 14-16.
- Knight, R. L. 2008. The Birds of Northeast Tennessee: An

- Annotated Checklist. Second edition. Bristol Bird Club, Bristol, TN. 127 pp.
- Knight, R. L. 2010. Summer birds of the Roan Mountain highlands. *Migrant* 81: 1-28.
- Lee, D. S. 1985. Breeding-season records of boreal birds in western North Carolina with additional information on species summering on Grandfather Mountain. *Chat* 49: 85-94.
- Mengel, R. M. 1965. The Birds of Kentucky. American Ornithologists' Union Monograph No. 3. The Allen Press, Lawrence, KS. 581 pp.
- Murray, J. W. 1974. A check-list of the birds of Montgomery County, Virginia. *Raven* 45: 55-70.
- Phillips, R. A. 1979. Notes on summer birds of the Canadian zone forest of Roan Mountain. *Migrant* 50: 73-76.
- Potter, E. F., J. F. Parnell, and R. P. Teulings. 1980. Birds of the Carolinas. University of North Carolina Press, Chapel Hill, NC. 408 pp.
- Pratt, D. H. 1971. Additional notes on the birds of the Great Smoky Mountains National Park in North Carolina. *Chat* 35: 1-8.
- Robinson, J. C. 1990. An Annotated Checklist of the Birds of Tennessee. University of Tennessee Press, Knoxville, TN. 274 pp.
- Rottenborn, S. C. and E. S. Brinkley (editors). 2007. Virginia's Birdlife: An Annotated Checklist. Fourth Edition. Virginia Avifauna No. 7, Virginia Society of Ornithology. 330 pp.
- Schorger, A. W. 1955. The Passenger Pigeon. Its Natural History and Extinction. University of Wisconsin Press, Madison, WI. 424 pp.
- Simpson, M. B., Jr. 1976. Breeding of the Passenger Pigeon in the Blue Ridge Mountains of Virginia during 1874. *Raven* 47: 67-69.
- Simpson, M. B., Jr. 1992. Birds of the Blue Ridge Mountains. University of North Carolina Press, Chapel Hill, NC.
- Squires, J. R. and R. T. Reynolds. 1997. Northern Goshawk (*Accipiter gentilis*) In A. Poole and F. Gill (editors). The Birds of North America, No. 298. The Academy of Natural Sciences of Philadelphia, PA and the American Ornithologists' Union, Washington, DC. 31 pp.
- Squires, J. R. and P. L. Kennedy. 2006. Northern Goshawk ecology: an assessment of current knowledge and information needs for conservation and management. Pp. 8-62 In M. L. Morrison (editor). The Northern Goshawk: A Technical Assessment of Its Status, Ecology, and Management. Studies In Avian Biology No. 31, Cooper Ornithological Society. 369 pp.
- Todd, W.E. C. 1940. The Birds of Western Pennsylvania. University of Pittsburgh Press, Pittsburgh, PA. 710 pp.
- Tove, M. 1979. Goshawk at Shining Rock Wilderness Area, N.C. *Chat* 41: 96.
- Webb, R. 2005. Birds of Bath and Highland Counties in Virginia. Second edition. Bath-Highland Bird Club, Monterey, VA. 74 pp. Online: http://www.virginiabirds.net/VSO_PDFs/Bath-Highland_Birds_04.pdf

PATTERNS OF BIRD COMMUNITY STRUCTURE AT MANASSAS NATIONAL BATTLEFIELD PARK, VIRGINIA

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ABSTRACT

The diverse habitats of the Manassas National Battlefield Park support a rich and abundant bird fauna. Analysis of the annual bird count data of the park from 1995 to 2009 shows no significant changes in the species composition or numbers during the 15 year period, but seems to follow the trend seen in the North American Breeding Bird survey results. In spite of the somewhat urban setting, the park harbors a good number of raptors, indicating a healthy ecosystem. The conservation projects, including the restoration of grasslands, maintain the quality of habitat and the status of the bird fauna in the park.

INTRODUCTION

Short term studies on birds have been conducted in Manassas National Battlefield Park (MNBP) (Peterjohn, 2006; Garabedian *et al.*, 2010), but no information about long term changes to the avian community structure in the Park has been published. In this paper we analyze observational bird data collected from the Manassas National Battlefield Park (MNBP) from 1995-2009 and examine the change in the status and composition of the different species over these years.

STUDY AREA

Of the 1779 ha in the park, about a third is covered by grasslands, while about half is covered by forests. The forests vary in character from early successional Virginia Pine (*Pinus virginiana*)/Eastern Red Cedar (*Juniperus virginiana*) stands to relatively mature oak/hickory stands with bottomland hardwood forests along the streams. The remaining third consists of approximately 240 ha of grassy fields and approximately 50 ha of small shrubby fields, the latter of which are mowed every 3-4 years to prevent succession into second growth woods. Shrubby habitats also exist as fencerows and narrow corridors bordering fields. Most of the forest communities in the park are in the mid-to-late-successional stages of recovery from some form of human disturbance, such as agricultural conversion or logging. They represent the potential natural communities of the study area landscape. Published descriptions of the vegetation of the park are available (Flemming & Webber, 2003; Peterjohn, 2006).

Once the park was established, some of the open lands were used for hay production and were devoted to introduced cool-season species. In 1998, MNBP personnel initiated a program to establish native warm-season grasses in some fields. Fields dominated by cool-season

grasses are mowed beginning in late May and early June and mowing is continued throughout the summer. Warm season grasses are harvested beginning in July, but mowing ceases before August 15. Conservation programs such as the restoration of grasslands and management of forests are aimed at improving the quality of habitats for wildlife in the National Park.

METHODS

Field Counts: Point count data from 15 annual surveys of the MNBP was collected. Survey points were selected using a standardized 250 m grid. Survey volunteers were recruited and assigned to teams consisting of a master birder or team leader able to identify bird species in Northern Virginia by sight or sound and usually one or more assistants. Only the master birder counted the birds during point counts. Other team members assisted by helping to locate points, acting as timers and recording the data. Wherever possible, the master birder surveyed the same points year after year. The count period ran from 1-30 June (or early July in unavoidable circumstances) and took place between dawn and 08:30 when birds are most active and vocal and human related noise is at a minimum. The length of each point count was exactly 5 minutes. Each point was surveyed only once a year. Pishing or playing of bird sound recordings were not allowed. All species were identified by call, song, or visually, and the numbers of individuals, no matter the distance from the points, were tallied on the survey data sheets. Flyovers were indicated. Other information on the data sheets included point number, count start time, wind and sky codes, and evidence of breeding activity (since 2004). For the purpose of analysis, only those species identified and encountered during the five minute period were entered in the data sheet.

RESULTS

Numbers of Species and Individuals: Altogether 109 species of birds were recorded in June within Manassas National Park during the 15 year period 1995-2009. This included eleven species of water and wetland birds, eight species of raptors, five species of woodpeckers and other non-passerines and seventy-six species of passerines (Appendix I). Abundance and richness of birds in the park during these years are shown in Figures 1 & 2. Bird numbers in these 15 year period is mostly attributed to the high abundance of American Crow (*Corvus brachyrhynchos*) and European Starling (*Sturnus vulgaris*). Holmes *et al.* (1979) observed that the bird community composition within and between forest habitats is largely dependent

on the physical structure of the vegetation, the kind of distribution of foraging substrates, and the availability and abundance of insect resources, all of which are influenced by the species composition of the plant community.

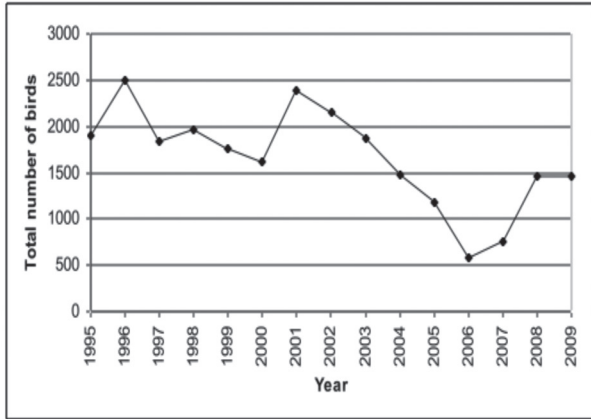


Figure 1: Total Numbers of Birds Recorded in Manassas Park, 1995-2009.

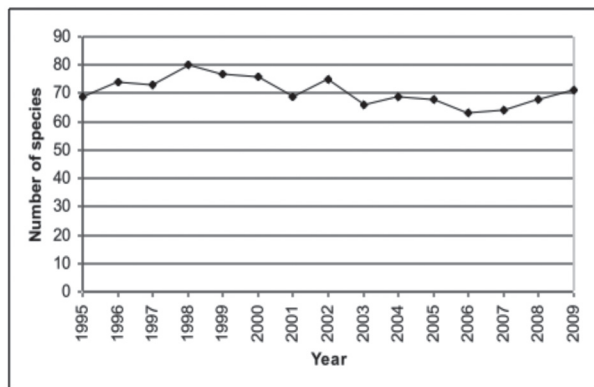


Fig 2: Total number of species recorded, 1995-2009

Grassland Birds: Two of the four ‘obligatory’ grassland species, Eastern Meadowlark (*Sturnella magna*) and Grasshopper Sparrow (*Ammodramus savannarum*), were recorded in the park during the census period. Two noticeable fluctuations were observed in the case of these grassland birds, especially the Eastern Meadowlark (see Fig. 3). Eastern Meadowlarks were recorded in comparatively good numbers from 1995 to 1999 and then showed a drastic drop in 2000. From 2001 to 2005 they almost regained their former abundance, but then were totally absent again in 2006. They reappeared again in 2007 and were observed in increasing numbers over the next two years. But no significant developments occurred in the park during these years.

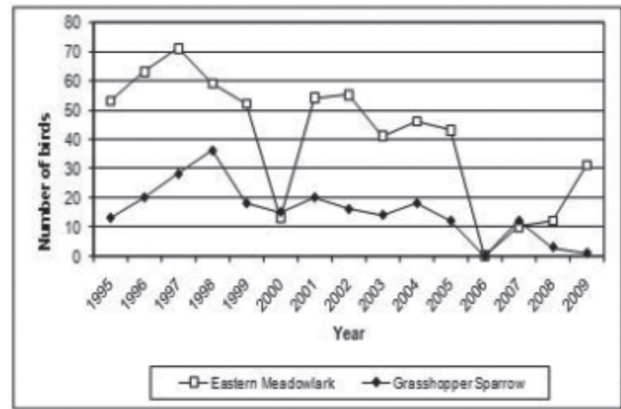


Fig 3. Numbers of Grassland Birds in Manassas Park, 1995-2009

Shrubland Birds: Populations of breeding shrubland birds, such as the Field Sparrow (*Spizella pusilla*), Song Sparrow (*Melospiza melodia*), Eastern Towhee (*Pipilo erythrophthalmus*), Northern Cardinal (*Cardinalis cardinalis*), Indigo Bunting (*Passerina cyanea*), Prairie Warbler (*Dendroica discolor*), Common Yellowthroat (*Geothlypis trichas*), Yellow-breasted Chat (*Icteria virens*), and Gray Catbird (*Dumetella carolinensis*), showed somewhat similar fluctuations throughout the study (Fig.4). All the shrubland birds observed by Peterjohn (2006) were seen during the survey, though in smaller numbers than he reported. The area of shrubby successional habitats in Manassas is relatively small. There was a drop in the numbers of shrubland birds in 2006. A sign of recovery could be noticed in 2008. A general decline in shrubland birds in the Eastern U.S during recent decades has been reported. (Askins 1993).

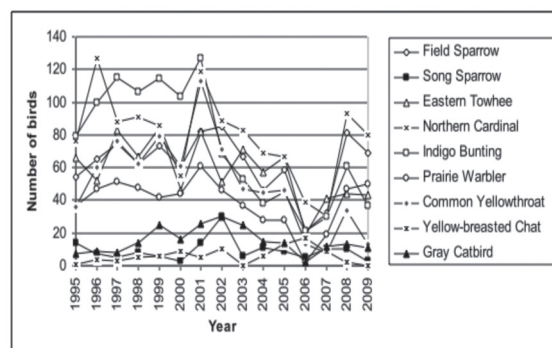


Fig. 4. Numbers of Shrubland Birds Recorded in Manassas Park, 1995-2009.

SUMMARY

Results of an analysis of the bird data collected from the Manassas National Battlefield Park during a 15 year period seem to follow the trend seen in the results of the North American Breeding Bird Survey (Saur *et al.*, 2012). But no significant changes were noticed in the number of European Starling (*Sturnus vulgaris*), Red-winged Blackbird (*Agelaius phoeniceus*), Field Sparrow (*Spizella pusilla*), or American Robin (*Turdus migratorius*) (see Appendix II). A decline in the number of Blue Jay (*Cyanocitta cristata*) was, however, noted. The park provides a healthy and diverse habitat for different groups of birds. The restored grasslands harbor a healthy population of birds. Changes in trends with reference to grassland and shrubland birds were examined.

RECOMMENDATIONS

A habitat-wide analysis of the bird species in different months and the guild structure could provide a better understanding of the effects of restoration in the park. In recent years, application of the guild concept has been widely used to assess the environmental impact (Landres, 1983). An in-depth study is needed for the habitat utilization by the wintering grassland bird species as well as the effect of grassland area, grass species and edge effects on the birds. Since the Meadowlark is a species of concern in some parts of the Eastern US, the grassland habitats at Manassas might be a desirable place for some habitat restoration to help this species to recover at this location. (Holmes, pers. comm.)

ACKNOWLEDGEMENTS:

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REFERENCES

- Askins, R. A. 1993.** Population trends in grassland, shrubland and forest birds in eastern North America. *Current Ornithology* 11:1-34.
- Fleming, G. P. and J. T. Weber. 2003.** Inventory, classification and map of forested ecological communities at Manassas National Battlefield Park, Virginia. Natural Heritage Technical Report 03-7
- Garabedian, J., F. Ammar and E. Gates. 2010.** Habitat associations of over-wintering birds in restored grasslands in the Manassas National Battlefield Park, Virginia. Annual Report.
- Holmes, R. T., R. E. Bonney, Jr, and S. W. Pacala. 1979.** Guild structure of the Hubbard Brook bird community: a multivariate approach. *Ecology* 60:512-520
- Landres, P. B. 1983.** Use of the guild concept in environmental impact assessment. *Environmental Management*. Vol.7, No. 5393-398

- Peterjohn, B. 2006.** Grassland and Shrubland birds of Manassas National Battlefield Park: Current status and management recommendation. Draft report.
- Saur, J. R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkosvski Jr. and W. A. Link. 2012.** The North American Breeding Bird Survey, Results and Analysis 1966-2011. Version 07 03 2013. USGS. Patuxant Wildlife Research Center, Laurel, MD.

**Appendix I. Bird species counted at Manassas National
Battlefield Park, 1995-2009**

Common Name	Scientific Name
Canada Goose	<i>Branta canadensis</i>
Mallard	<i>Anas platyrhynchos</i>
duck sp.	
Wood Duck	<i>Aix sponsa</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Great Blue Heron	<i>Ardea herodias</i>
Green Heron	<i>Butorides virescens</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
Black Vulture	<i>Coragyps atratus</i>
Turkey Vulture	<i>Cathartes aura</i>
Cooper,s Hawk	<i>Accipiter cooperii</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
American Kestrel	<i>Falco sparverius</i>
Killdeer	<i>Charadrius vociferous</i>
American Woodcock	<i>Scolopax minor</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Rock Pigeon	<i>Columba livia</i>
Mourning Dove	<i>Zenaida macroura</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Barred Owl	<i>Strix varia</i>
owl sp.	
Eastern Whip-poor-will	<i>Antrostomus vociferous</i>
Chimney Swift	<i>Chaetura pelagica</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Belted Kingfisher	<i>Megaceryl alcyon</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Northern Flicker	<i>Colaptes auratus</i>
Piliated Woodpecker	<i>Dryocopus piliatus</i>
woodpecker sp.	
Eastern Wood-Pewee	<i>Contopus virens</i>
Acadian Flycatcher	<i>Empidonax virescens</i>
Willow Flycatcher	<i>Empidonax traillii</i>
flycatcher sp.	
unidentified*	
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Great-crested Flycatcher	<i>Myiarchus crinitus</i>
White-eyed Vireo	<i>Vireo griseus</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Warbling Vireo	<i>Vireo gilvus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Blue Jay	<i>Cyanocitta cristata</i>
American Crow	<i>Corvus brachyrhynchos</i>
Fish Crow	<i>Corvus ossifragus</i>
Common Raven	<i>Corvus corax</i>
crow sp.	
Purple Martin	<i>Progne subis</i>

Tree Swallow	<i>Tachycineta bicolor</i>
No. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Bank Swallow	<i>Riparia riparia</i>
swallow sp.	
Barn Swallow	<i>Hirundo rustica</i>
Carolina Chickadee	<i>Poecile carolinensis</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
House Wren	<i>Troglodytes aedon</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Blue-gray Gnatcatcher	<i>Poliptela caerulea</i>
Eastern Bluebird	<i>Sialia sialis</i>
Veery	<i>Catharus fuscescens</i>
Wood Thrush	<i>Hylocichla mustelina</i>
American Robin	<i>Turdus migratorius</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Brown Thrasher	<i>Toxostoma rufum</i>
European Starling	<i>Sturnus vulgaris</i>
Cedar Waxwing	<i>Bombcilla cedrorum</i>
Northern Parula	<i>Setophaga americana</i>
Yellow Warbler	<i>Setophaga petechia</i>
Yellow-rumped Warbler	<i>Setophaga coronata</i>
Yellow-throated Warbler	<i>Setophaga dominica</i>
Pine Warbler	<i>Setophaga pinus</i>
Prairie Warbler	<i>Setophaga discolor</i>
Palm Warbler	<i>Setophaga palmarum</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>
Worm-eating Warbler	<i>Helmitheros vermivorum</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Louisiana Waterthrush	<i>Parkesia motacilla</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Summer Tanager	<i>Piranga rubra</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Chipping Sparrow	<i>Spizella passerina</i>
Field Sparrow	<i>Spizella pusilla</i>
Vesper Sparrow	<i>Poocetes gramineus</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Song Sparrow	<i>Melospiza melodia</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
sparrow sp.	
Northern Cardinal	<i>Cardinalis cardinalis</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Indigo Bunting	<i>Passerina cyanea</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Catbird	<i>Molothrus ater</i>
Orchard Oriole	<i>Icterus spurius</i>
Baltimore Oriole	<i>Icterus galbula</i>
House Finch	<i>Haemorhous mexicanus</i>
American Goldfinch	<i>Spinus tristis</i>
House Sparrow	<i>Passer domesticus</i>

Appendix II (cont'd). Bird Count Data of the Manassas National Battlefield Park: 1995-2009																
SPECIES \	\ YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Red-eyed Vireo		60	32	44	44	37	34	49	21	34	44	20	9	15	21	19
Blue Jay		62	18	35	57	37	23	44	61	37	26	23	4	8	37	26
American Crow		245	271	185	171	140	111	207	126	123	56	44	19	72	71	66
Fish Crow		6	1	4	1	11	1	1	1	0	6	0	0	1	6	8
Common Raven		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
crow sp.		0	0	0	6	17	7	23	10	5	12	3	2	1	6	8
Purple Martin		0	1	1	0	0	0	0	5	0	6	0	0	0	1	0
Tree Swallow		0	2	0	0	7	3	2	5	4	3	7	4	0	1	17
N.Rough-winged Swallow		0	0	5	0	1	0	0	0	0	0	0	1	0	0	2
Bank Swallow		0	0	0	2	1	2	0	0	4	0	0	0	0	0	0
swallow sp.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Barn Swallow		74	113	94	63	42	41	53	59	49	65	28	6	18	15	65
Carolina Chickadees		71	55	68	51	39	49	57	76	38	25	41	18	22	41	58
Tufted Titmouse		83	102	85	92	68	53	58	78	59	26	36	20	19	55	63
White-breasted Nuthatch		14	4	11	15	15	12	12	8	9	6	11	10	7	7	12
Carolina Wren		34	8	16	34	31	29	66	41	15	26	33	18	26	66	67
House Wren		4	0	4	3	6	2	5	2	2	0	3	0	1	1	3
Ruby-crowned Kinglet		0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
Blue-gray Gnatcatcher		38	15	15	24	14	34	33	22	12	12	16	14	12	30	48
Eastern Bluebird		8	39	12	22	16	26	15	36	3	11	10	10	16	20	9
Veery		0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
Wood Thrush		43	17	56	46	38	30	70	32	25	29	29	15	16	14	7
American Robin		36	21	15	46	23	42	33	47	46	35	14	22	33	63	39
Gray Catbird		7	9	8	14	25	16	26	30	25	15	14	2	12	13	11
Northern Mockingbird		21	23	19	23	22	19	30	31	26	19	14	11	8	28	49
Brown Thrasher		3	16	11	5	5	11	21	15	12	10	13	6	1	2	0
European Starling		163	391	102	177	132	253	301	99	277	131	89	23	35	160	156
Cedar Waxwing		2	2	22	20	1	7	5	14	8	6	4	2	2	26	3
Northern Parula		12	2	2	7	0	6	3	2	2	2	0	0	0	2	1
Yellow Warbler		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow-rumped Warbler		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Yellow-throated Warbler		0	1	0	0	4	0	0	0	0	0	0	0	0	0	2
Pine Warbler		9	3	10	3	3	3	10	6	4	2	3	1	0	2	9
Prairie Warbler		37	47	51	48	42	44	61	46	37	28	28	2	19	47	50
Palm Warbler		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Prothonotary Warbler		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Worm-eating Warbler		2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Owenbird		11	3	5	7	10	15	19	14	6	6	5	11	1	0	1
Louisiana Waterthrush		0	1	1	0	2	1	0	2	0	0	0	0	0	0	0
Common Yellowthroat		36	60	76	62	79	61	113	71	47	45	46	13	8	34	13
Yellow-breasted Chat		1	4	3	5	6	9	5	10	0	6	13	17	9	2	0
Summer Tanager		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Scarlet Tanager		9	14	17	6	19	2	11	16	18	9	9	9	2	5	8
Eastern Towhee		66	52	83	67	84	46	82	51	71	57	67	19	41	44	43
Chipping Sparrow		19	12	13	20	20	13	16	15	17	9	15	5	20	23	26
Field Sparrow		54	65	75	62	73	60	82	85	67	46	59	21	32	81	69
Vesper Sparrow		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Grasshopper Sparrow		13	20	28	36	18	15	20	16	14	18	12	0	12	3	1

Appendix II (cont'd). Bird Count Data of the Manassas National Battlefield Park: 1995-2009																
SPECIES \	YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Song Sparrow		14	7	5	8	6	3	14	30	6	11	9	5	10	10	3
White-throated Sparrow		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
sparrow sp.		0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Northern Cardinal		76	127	88	91	86	55	119	89	83	69	67	39	30	93	80
Blue Grosbeak		2	4	3	1	1	3	1	4	3	2	5	0	5	0	1
Indigo Bunting		99	100	115	106	114	103	127	68	53	38	45	21	30	61	37
Red-winged Blackbird		35	38	35	61	47	50	62	160	137	121	64	20	23	62	44
Eastern Meadowlark		53	63	71	59	52	13	54	55	41	46	43	0	10	12	31
Common Grackle		81	428	54	63	58	41	72	101	119	92	24	9	4	37	62
Brown-headed Cowbird		14	4	3	14	11	6	6	18	11	9	10	2	4	14	12
Orchard Oriole		0	3	0	7	1	0	7	4	2	2	7	3	5	3	1
Baltimore Oriole		0	0	1	3	1	0	2	4	2	1	1	2	0	1	3
House Finch		1	1	3	0	1	1	2	7	0	2	0	3	3	3	1
American Goldfinch		31	19	26	35	40	43	64	66	69	44	46	29	45	37	46
House Sparrow		0	0	0	8	2	0	0	2	1	0	1	0	0	0	1
Totals		1899	2503	1836	1963	1764	1622	2392	2150	1872	1472	1185	579	755	1453	1454

**ABSTRACTS OF THREE PAPERS AND TWO POSTERS PRESENTED:
VSO ANNUAL MEETING, SCIENTIFIC PAPER SESSION**

Saturday, 26 April 2014; Chesapeake, VA

An asterisk (*) denotes the presenting author.

THREE PAPERS:

Conspecific Attraction of a Declining Songbird, the Golden-winged Warbler (*Vermivora chrysoptera*), in a Fragmented Landscape

Dan Albrechet-Mallinger* (*VSO conservation grant recipient*) and Leslie P. Bulluck
Virginia Commonwealth University

The Golden-winged Warbler (*Vermivora chrysoptera*) has been in decline in Virginia since the early 1900s and can now only be found in high-elevation Appalachian refugia. The use of social cues, such as broadcast song, has been proposed as a tool recruit declining songbirds such as Golden-winged Warblers to managed habitats. However, studies of the phenomenon of conspecific attraction have primarily been performed over small spatial scales with limited landscape heterogeneity. In contrast, Golden-winged Warblers exist in disparate populations on a complex mosaic of habitats. We tested the recruitment power of broadcast social cues in a low-density population of Golden-winged Warblers in Highland County, VA from 2012 to 2013. While habitat patches with playback experienced increases in density compared to non-treatment patches, recruitment was modest in comparison to other studies. We propose that this suggests that the social cues signal experiences functional attenuation in fragmented landscapes with patchy population distribution. We suggest that future study should investigate the applicability of conspecific attraction as a means to manage local populations to best facilitate habitat maintenance.

The Occurrence and Consequences of Conspecific Brood Parasitism in the Prothonotary Warbler (*Protonotaria citrea*)

Anna M. Tucker* (*Murray Award winner*),
Lesley Bulluck, Rodney Dyer, and Sarah Huber
Virginia Commonwealth University.

Parental care is energetically expensive and brood parasites avoid this cost by laying eggs in the nest of other birds. Conspecific brood parasitism (CBP) has been widely documented in birds, mainly in species with precocial young that require little parental care post hatching. Here we describe the occurrence of CBP in the Prothonotary

Warbler (*Protonotaria citrea*), a species in which the parents provide intensive provisioning of young. Using maternal exclusion analyses of 333 family groups breeding across five years (2009 to 2013) at eight microsatellite loci, we found that 23.4% of clutches contained at least one offspring that was not matched to the social mother. We predicted that raising unrelated young would impose energetic or fitness costs on the host female, and found that females who raise a mismatched offspring produced fewer young over their lifetime than those that did not (1.3 ± 0.31 fewer offspring per year). This could have implications to population dynamics, and raises many more questions about the breeding behaviors of this and other warbler species.

Bird Habitat Use within Home Ranges: Implications for Species Persistence in Human-Modified Landscapes

Vitek Jirinec (*Murray Award winner*)
College of William and Mary

Following the trend of many migratory birds, populations of the Wood Thrush (*Hylocichla mustelina*) have experienced long-term range-wide population declines over the last few decades. Due in part to the conspicuous, flute-like song of the male, the Wood Thrush is a charismatic and well-known species that is often a symbol of declining Nearctic-Neotropical migrants and thus a focus of conservation and management plans. A number of studies indicate the Wood Thrush is an area-sensitive species, whose nest success and probability of occurrence decline with decreasing forest patch size. However, our three-year point count study in suburban and low-development areas in Virginia provides little evidence for decreased probability of occurrence in smaller forest fragments. Perhaps then, urbanization per se is not necessarily detrimental to the Wood Thrush, as long as certain habitat requirements are met. Although the species is fairly-often studied, there is very little information on Wood Thrush microhabitat associations. I will capture and radio-track 40 birds over two breeding seasons (2013, 2014) in tandem with vegetation and food abundance sampling. I hypothesize that microhabitat features explain the space-use pattern in the species. I predict that high-use areas will have a specific set of vegetation structure characteristics not found in low-use areas, as well as higher invertebrate prey abundance than low-use areas. Preliminary analyses of 2013 data indicate that high-use areas (n=20) contain higher dry mass of worm and beetle-like leaf litter invertebrates than low-use areas within Wood Thrush home ranges. This knowledge could be important in targeting proper areas for conservation purposes.

TWO POSTERS:**Temporal Variation in Breeding Success and Corticosterone Levels in Eastern Bluebirds (*Sialia sialis*)**

Emily Clark*, Judith A. Guinan, Jason E. Davis
Radford University

The breeding season for eastern bluebirds, *Sialia sialis*, stretches from March to August in southwestern Virginia. Factors such as food availability, temperature, and age of the female can affect when a female begins to nest. We looked to see if there was temporal variation in reproductive success throughout the season using data from a five year study on breeding behavior of eastern bluebirds. Four years of data on corticosterone, a stress hormone, were also examined to see if there was variation within the season and a correlation in levels between family members. We found that clutch size decreased as the season progressed, but that nesting, hatching, and fledging success did not vary throughout the season. Heavier females were found to have heavier offspring and to nest earlier in the season. Male corticosterone was found to decrease as the season progressed, but neither nestling nor female corticosterone showed any variation within the season. We found a strong, positive correlation between female corticosterone and nestling corticosterone and between female corticosterone and male corticosterone. No correlation was seen between male corticosterone and nestling corticosterone.

between the two sides of the bird was used as the measure of fluctuating asymmetry. Feathers are grown throughout a bird's life and develop under the influence of mercury whether the birds are exposed as adults or as embryos, whereas tarsus bones are unaltered after development. We have so far found no evidence that feathers or tarsus asymmetry is sensitive to mercury exposure.

Fluctuating Asymmetry as a Measure of Developmental Stress in Mercury-Dosed Zebra Finches

Capwell Taylor, Janice Y. Park, Julia B. Kihm,
 John P. Swaddle, Daniel A. Cristol
College of William and Mary

Methylmercury has varying effects across a wide range of physiological processes and is a known environmental stressor to songbirds. The degree to which a normally symmetrical organism deviates from bilateral symmetry can reflect the degree of environmental stress during development. To determine if asymmetry serves as an indicator of stress caused by mercury exposure in songbirds, we measured fluctuating asymmetry in the weight of primary feathers and the length of tarsus bones in captivebred Zebra Finches and wild-caught European Starlings exposed to dietary mercury.

Methylmercury cysteine was mixed with the food in five concentrations: 0.0, 0.3, 0.6, 1.2, and 2.4 parts per million. Some birds were exposed to mercury only as adults while others were exposed to it from the earliest stages of development because their parents were given mercury-based diets. Asymmetry measurements are taken by plucking complementary primary feathers, one from each wing, and weighing them to 0.00001g precision. The tarsus bones were dissected out of deceased birds and measured using a digital caliper. The absolute percent difference

ANNUAL REPORT OF THE VIRGINIA AVIAN RECORDS COMMITTEE

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The members of the 2013 Virginia Avian Records Committee (VARCOM) were Robert Ake (Chair), Wendy Ealding (Secretary), Arun Bose, John Spahr, Andrew Baldelli, Nick Flanders, Dick Rowe, Adam D'Onofrio and Mike Stinson.

The Old Dominion University (ODU) Computer Science senior class students continued development of an online data entry and records management system for VARCOM as their senior class project under the mentorship of Chair Ake. This is known as DOVES (Database for Ornithological Verification and Submission). At its fall meeting the VSO Board approved \$2500 for a grant to ODU to continue the project. A team of ODU graduate students has brought DOVES to operational status on the ODU computer and is running trials with simulated data. By next summer it is expected that DOVES will have been tested with actual data, ported to a commercial site, and opened for submissions from Virginia birders.

The Committee reviewed the ByLaws and recommended a number of changes to reflect current practices. The items were:

- change Section III.C.2.b to allow electronic communication with potential candidates
- change Section III.C.3.d to clarify deadlines for members voting on submissions
- change Section IV.A to allow the annual meeting to be held in spring rather than just March
- change Section VI.E to clarify the roles of Secretary and Chair in communicating results of submissions to observers
- change Section VI.E to clarify the roles of Secretary and Chair in publishing the annual report

In addition the MD/DC Records Committee had notified VARCOM about their revision of their pelagic boundaries to comply with the Federal Department of Interior Minerals Management Service (now the Bureau of Ocean Energy Management (BOEM)) which explicitly defined state offshore administrative boundaries from 3-200 nautical miles, and they have formed a subcommittee to address any records from the neighboring states that may be impacted. This necessitated a change to the definition of Virginia's northern pelagic boundary to prevent conflict. Accordingly the Committee recommended the following change to the ByLaws

- change Section II. C. to change the language concerning the northern pelagic boundary to conform with Maryland's revised southern boundary

These changes were balloted and passed by VARCOM, and were approved by the VSO Board August 10, 2013.

The following decisions were made by the Virginia Avian Records Committee during calendar year 2013. Accepted records fall into one of the following Categories, as specified in VSO bylaws:

Category 1. Any bird that has occurred in Virginia and has been accepted by VARCOM as a wild bird on the basis of an observation accompanied by a photograph, specimen, audio or video recording, or band (for bands, only in cases where proof of identification is extant and compelling).

Category 2. Sight records without physical evidence, but for which there is written documentation from one or more observers accepted by VARCOM. This Category currently includes the following species: Garganey, Barrow's Goldeneye, American Flamingo, Yellow-nosed Albatross, Fea's Petrel, Bulwer's Petrel, Short-tailed/Sooty Shearwater, Red-billed Tropicbird, Neotropic Cormorant, White-tailed Kite, Western Marsh-Harrier, Red-necked Stint, Eurasian Woodcock, Black Guillemot, Brown Noddy, Black-billed Magpie, Boreal Chickadee, Sage Thrasher, Sprague's Pipit, Bohemian Waxwing, Townsend's Warbler, Spotted Towhee, Black-throated Sparrow, and Shiny Cowbird. **Several of these species have reportedly been photographed in Virginia; VARCOM would very much appreciate help in locating photographs or specimens of Category 2 species.**

Category 3. Identity accepted by VARCOM but provenance of the individual bird is uncertain. **Category 3a** shall be comprised of such species with physical evidence in Virginia. **Category 3b** shall be comprised of such species lacking physical evidence. Category 3 shall not include individuals or species deemed by VARCOM to be most likely escaped/released former captives, whether from inside Virginia or otherwise. Species for which there are no Virginia records *except* Category 3 currently include: West Indian Whistling-Duck, Barnacle Goose, and European Goldfinch.

Category 4. Records that are judged to be acceptable by historical standards but that may not meet current standards of acceptance, including extinct species that once occurred in Virginia, for which there is no clear written or physical evidence. In this Category, VARCOM currently includes Trumpeter Swan, Eskimo Curlew, and Carolina Parakeet. No status or Category is given to Labrador Duck, Greater Prairie-Chicken, Whooping Crane, Great Auk, or Ivory-billed Woodpecker, which may have occurred in Virginia

in centuries past but for which no extant conclusive documentation is known.

Category 5. Species introduced into the Commonwealth of Virginia or into other parts of North America that are currently maintaining self-sustaining wild populations within Virginia. These currently include seven species: Mute Swan, Rock Pigeon, Eurasian Collared-Dove, Monk Parakeet, European Starling, House Finch, and House Sparrow.

Category 6. Species that were introduced into Virginia and that appeared for a time to be sustaining wild populations within the state but that have since been extirpated. This Category currently includes Ring-necked Pheasant.

The Committee disposed of 79 records during 2013; of these 71 were accepted and 8 were not accepted.

One first Virginia record was accepted as follows: Northern Lapwing

One Virginia record was reclassified from Short-tailed Shearwater to Short-tailed/Sooty Shearwater

Highlights for 2013 include documentation of the widespread "phalarope fallout" associated with a storm event in early May, sixth state records for Long-billed Curlew and Say's Phoebe changing their status on the official species list from "Accidental" to "Rare", a first verified Piedmont winter record for Wood Thrush, and a first state record for Nelson's Sparrow since the species was formally added to the Review List in 2012 following the 1995 AOU split.

The following codes are used in the accounts:

† = written documentation

ph. = photograph

vr. = voice recording

vt. = videotape

* = specimen (i.e., labeled and preserved, not simply a dead bird)

m. obs. = many observers

Accepted Records

BLACK-BELLIED WHISTLING-DUCK (*Dendrocygna autumnalis*) One individual, Kempsville, Virginia Beach [Yobp and Yobp] May 12-13, 2013; Accepted Category 1 (ph. †); tenth state and sixth Coastal Plain record

GREATER WHITE-FRONTED GOOSE (*Anser albifrons*) One individual, Rockbridge County [Rowe] February 13-16, 2013; Accepted Category 1 (ph. †): 10th Mountains and Valleys record

ROSS'S GOOSE (*Chen rossii*) One adult, Augusta County [Leigh] December 2, 2012 through January 1, 2013; Accepted Category 1 (ph. †); 10th Mountains and Valleys record

ACKLING GOOSE (*Branta hutchinsii*) Four records as follows:

Eight individuals, Willow Lake, Rockbridge County [Rowe] January 2-3, 2013; Accepted Category 1 (ph. †); first Mountains and Valleys record since 2004 split from Canada Goose

One individual, Heston Farm Ponds, Augusta County [Rowe and Rowe] January 5, 2013; Accepted Category 1 (ph. †); second Mountains and Valleys record since 2004 split from Canada Goose

One individual, Harrison Rd, Fauquier County [Fox] January 14, 2013 – March 9, 2013; Accepted Category 1 (ph. †): third Piedmont record since 2004 split from Canada Goose

One individual, Beaver Creek Reservoir Park, Albemarle County [Myers] February 9, 2013; Accepted Category 1 (ph. †): fourth Piedmont record since 2004 split from Canada Goose

EURASIAN WIGEON (*Anas penelope*) One adult male, Pohick Bay Regional Park, Fairfax County, [Larsen, Lowther, Chittum, Fox, Mayer], January 27 – March 9, 2013; Accepted Category 1 (ph. †): first Western Coastal Plain record since 2012 Review List regional revision.

CINNAMON TEAL (*Anas cyanoptera*) One male, Back Bay NWR [Ake, Davis, Markley] April 15, 2011; Accepted Category 1 (ph. †): third state and Coastal Plain record, first since 1998

EURASIAN GREEN-WINGED TEAL (*Anas crecca crecca*) Two records as follows:

One adult male, Chincoteague NWR, [Bose] March 24, 2013; Accepted Category 1 (ph. †): second state and Coastal Plain record

One adult male, Craney Island, [Williams et al] March 28, 2013; Accepted Category 2 (†): third state and Coastal Plain record

SURF SCOTER (*Melanitta perspicillata*) Four records as follows:

Two individuals, Willow Lake, Rockbridge County [Pancake, Olson, Rowe] October 29-31, 2012; Accepted Category 1 (ph. †); second Mountains and Valleys record since 2004

Nine individuals, Lake Frederick, Frederick County [Carr, Fox] October 30, 2012; Accepted Category 1 (ph. †); third Mountains and Valleys record since 2004

One female, Kerr Reservoir, Mecklenburg County [D'Onofrio, Glass, Bose, Orcutt] March 9 – April 6, 2013; Accepted Category 1 (ph. †): eighth Piedmont record

One female, Bells Lane Ponds, Staunton, [Larner, Warren et al] May 2-3, 2013; Accepted Category 1 (ph. †): fourth Mountains and Valleys record since 2004 Review List

WHITE-WINGED SCOTER (*Melanitta fusca*) One female, Kerr Reservoir, Mecklenburg County, [D'Onofrio, Glass] March 9, 2013; Accepted Category 2 (†): sixth Piedmont record reviewed and accepted by VARCOM

PACIFIC LOON (*Gavia pacifica*) One individual, Sherwood Lakes, Virginia Beach, [Enders and Monahan, m.obs.] March 14-27, 2013; Accepted Category 1 (ph. †); sixth Coastal Plain record

WESTERN GREBE (*Aechmophorus occidentalis*) Two records as follows:

Two individuals, Lake Anna, Spotsylvania County [Jones, Mapel, Tekin, Youkerd] December 11, 2012 – February 17, 2013; Accepted Category 1 (ph. †): fourth Piedmont record since 1985 split

One individual, Virginia Beach [Marcum] January 3, 2013; Accepted Category 2 (†): third Coastal Plain record reviewed and accepted by VARCOM since 1985 split from Clark's Grebe, and first since 2003. According to Rottenborn and Brinkley (2007), there are six prior Coastal Plain records

AMERICAN WHITE PELICAN (*Pelecanus erythrorhynchos*) One individual, Albemarle County [Miller] February 15, 2013; Accepted Category 1 (ph. †): third Piedmont record

SNOWY EGRET (*Egretta thula*) Two records as follows:

One individual, Bells Lane Ponds, Augusta County [Larner, Tekin] April 18, 2013; Accepted Category 1 (ph. †); first Mountains and Valleys record reviewed and accepted since 2004 Review List

One individual, Bear Creek Lake State Park, Cumberland County, [Ealding, Spears, Sherrill, Ames] June 17, 2013; Accepted Category 1 (ph. †); third Piedmont record reviewed and accepted by VARCOM since 2004 Review List, first Piedmont record for June since 1977, first County record

TRICOLORED HERON (*Egretta tricolor*) Three records as follows:

One juvenile, Staunton View Park Public Use Area, Halifax County [Glass, Foster] August 11, 2012; Accepted Category 2 (†); fourth Piedmont record since 2006

One adult, China Clay Road Wetlands, Augusta County [Laubach, Tekin and Nebel] May 7, 2013; Accepted Category 1 (ph. †); first Mountains and Valleys record since 2004 Review List

One juvenile, Dulles Greenway Wetlands Mitigation Project, Loudoun County [McGranaghan, Coleman] September 7 and 14, 2013; Accepted Category 1 (ph. †); fifth Piedmont record reviewed and accepted by VARCOM since 2004 Review List

GLOSSY IBIS (*Plegadis falcinellus*) One adult, Staunton River Battlefield State Park, Charlotte County portion, [Bruno, Elder et al] May 11, 2013; Accepted Category 2 (†); first Southern Piedmont record to be reviewed by VARCOM

SWALLOW-TAILED KITE (*Elanoides forficatus*) One adult, Columbia, Fluvanna County, [Johnson] May 30, 2013; Accepted Category 1 (ph. †): sixth Piedmont record

SANDHILL CRANE (*Grus canadensis*) Two records as follows:

Six individuals, Rockingham County [Leigh] November 11, 2012; Accepted Category 1 (ph. †); 14th Mountains and Valleys record

One adult, Dent Road, Roanoke County [Davis et al] May 16 – 19, 2013; Accepted Category 1 (ph. †); 15th Mountains and Valleys reviewed and accepted by VARCOM

AMERICAN AVOCET (*Recurvirostra americana*) One individual, Hunting Creek Bridge, Fairfax County [Ledwith] July 12 – August 15, 2013; Accepted Category 1 (ph. †); seventh Western Coastal Plain record reviewed and accepted by VARCOM since 2004 Review List

AMERICAN GOLDEN-PLOVER (*Pluvialis dominica*) Two adults, Staunton View Public Use Area, Mecklenburg [Glass, Foster, D'Onofrio, Blalock] September 2-15, 2013; Accepted Category 1 (ph. †); second Southern Piedmont record reviewed and accepted by VARCOM

NORTHERN LAPWING (*Vanellus vanellus*) One individual, Back Bay NWR, Virginia Beach [Nadolny and Hagemeyer] November 20, 2012; Accepted Category 1 (ph. †); first state and Coastal Plain record

WILLET (*Tringa semipalmata*) Bentivar Marsh, Albemarle County [Myers, Miller] August 2, 2013; Accepted Category 1 (ph. †); third Piedmont record since 1996

WHIMBREL (*Numenius phaeopus*) One individual, Shenandoah County [Trelawny] May 23, 2013, 2013-040; Accepted Category 1 (ph. †): according to Rottenborn and Brinkley (2007) there are seven records prior to 2005

LONG-BILLED CURLEW (*Numenius arquata*) Two records as follows:

Three individuals, Hummock Cove, Wachapreague, Accomack County [Schneider, Thompson, Kellam] October 12, 2012; Accepted Category 1 (ph. †); fifth state and fourth Coastal Plain record

Two individuals, Chincoteague NWR, Accomack County [Buffa, Morris] July 10, 2013; Accepted Category 2 (†); sixth state and fifth Coastal Plain record reviewed and accepted by VARCOM

BLACK-TAILED GODWIT (*Limosa limosa*) One individual, Chincoteague NWR, Accomack County [Orcutt, Leigh, Baranoff] October 6-26, 2012, [Rowe] March 11, 2013 – April 27, 2013; Accepted Category 1 (ph. †); considered to be the same individual as was accepted as a first state record in 2012

RUDDY TURNSTONE (*Arenaria interpres*) One juvenile, Staunton View Public Use Area, Mecklenburg, [Glass, D'Onofrio, Blalock] September 8, 2013; Accepted Category 1 (ph. †); eighth Piedmont record reviewed and accepted by VARCOM

RED-NECKED PHALAROPE (*Phalaropus lobatus*) Six records as follows:

One adult male, Berryville, Clarke County [Carr, Masi] May 19, 2013; Accepted Category 1 (ph. †) : seventh Mountains and Valleys record since 2004 Review List

One individual, Swoope Area, Augusta County [Larner] May 7, 2013; Accepted Category 1 (ph. †): third Mountains and Valleys record since 2004 Review List

One individual, Stuarts Draft--Wastewater Treatment Plant, Augusta County [Larner, Laubach, Tekin] May 7, 2013; Accepted Category 1 (ph. †): fourth Mountains and Valleys record since 2004 Review List

One individual, Mt. Vernon Road Pond, Augusta County [Laubach] May 7, 2013; Accepted Category 1 (ph. †): fifth Mountains and Valleys record since 2004 Review List

Five individuals, China Clay Road Wetlands, Augusta County [Laubach, Larner] May 7, 2013; Accepted Category 1 (ph. †): sixth Mountains and Valleys record since 2004 Review List

Two individuals, King Family Vineyard, Albemarle County [Surdowski, Brask] May 7-9, 2013; Accepted Category 1 (ph. †): eighth Piedmont record

RED PHALAROPE (*Phalaropus fulicarius*) Four records as follows:

5-6 individuals, Mill Creek Lake Park, Amherst County [Johnson, Elder, Dalmas and Weigand] May 7-9, 2013; Accepted Category 1 (ph. †): fourth Piedmont record and first since 1996

One individual, Rockbridge County [Rowe] May 8, 2013; Accepted Category 1 (ph. †): third Mountains and Valleys record

One individual, Stuarts Draft--Wastewater Treatment Plant, Augusta County [Larner, Laubach, Tekin] May 7, 2013; Accepted Category 1 (ph. †): second Mountains and Valleys record

Two adults, Shirley Plantation, Charles City County [D'Onofrio, Bose, Orcutt, Frye] May 7, 2013; Accepted Category 1 (ph. †): third onshore Coastal Plain record since 2003

SABINE'S GULL (*Xema sabini*) One adult, Harrisonburg-Rockingham Regional Sewer Authority, Rockingham County, [Portlock, m.obs.] September 6, 2012, Accepted Category 1 (ph. †): second Mountains and Valleys record

LAUGHING GULL (*Leucophaeus atricilla*) Two adults, Mill Creek Lake Park, Amherst County [Johnson] May 7, 2013;

Accepted Category 1 (ph. †): second Southern Piedmont record since 2004 Review List

CALIFORNIA GULL (*Larus californicus*) One second year bird, Lynnhaven Inlet, Virginia Beach [Ake, Kinzie, Pancake] August 15, 2012; Accepted Category 2 (†); 10th Coastal Plain record

ARCTIC TERN (*Sterna paradisaea*) One individual, Chincoteague NWR, Accomack County [Ake] July 26, 2013; Accepted Category 2(†); first onshore Coastal Plain record reviewed and accepted by VARCOM

SAY'S PHOEBE (*Sayornis saya*) Two records as follows:

One individual, Pleasure House Point, Virginia Beach, [Coari, Prendergast and Roberts] October 6-7, 2012; Accepted Category 1 (ph. †); sixth state and fourth Coastal Plain record

One individual, Highland County [Mapel, Gaige, T. Day] February 24-25, 2013; Accepted Category 1 (ph. †): seventh state and second Mountains and Valleys record, first Mountains and Valleys record since 1985

ASH-THROATED FLYCATCHER (*Myiarchus cinerascens*) One individual, Petersburg National Battlefield Park--City Point Unit, Hopewell [Bryan, Barnett] December 15, 2012; Accepted Category 1 (ph. †); tenth Coastal Plain record

SCISSOR-TAILED FLYCATCHER (*Tyrannus forficatus*) One adult, Manassas National Battlefield Park, Prince William County [Rossa] May 11, 2013; Accepted Category 2 (†): fifth Piedmont record since 2001

NORTHERN SHRIKE (*Lanius excubitor*) One individual, Raphine, Rockbridge County [Jackson, Jackson and Pancake] December 26-27, 2012; Accepted Category 1(ph. †); no prior VARCOM records for Mountains and Valleys; according to Rottenborn and Brinkley (2007) this is only the third record and the first since 1978

BROWN-HEADED NUTHATCH (*Sitta pusilla*) One individual, Dulles, Loudoun County [Brown] November 16, 2012; Accepted Category 2 (†); Not on Review List, courtesy review for Loudoun County Atlas Project, third Northern Piedmont record.

WOOD THRUSH (*Hylocichla mustelina*) One individual, Batesville, Albemarle County [Brask] December 1-4, 2012, Accepted Category 1 (ph. †); first verified winter record for Piedmont

GREEN-TAILED TOWHEE (*Pipilo chlorurus*) One individual, Great Neck Point, Virginia Beach, [Knight] June 3, 2013, Accepted Category 1 (ph. †); fifth state record, second reviewed and accepted by VARCOM, third Coastal Plain record, second state record since 1953

LARK SPARROW (*Chondestes grammacus*) Two records as follows:

One individual, Chesterfield County [Esworthy] November 4, 2012 through March 3, 2013, Accepted Category 1 (ph. †); third Piedmont record

One adult male, Sky Meadows SP, Fauquier County [Baron et al.] April 14, 2012, Accepted Category 2 (†): third Piedmont record by chronological sequence, fourth to be accepted

NELSON'S SPARROW (*Ammodramus nelson*) One individual, Lake Shenandoah, Rockingham County [Leigh] November 4, 2012, Accepted Category 1 (ph. †); first state and Mountains and Valleys record since species was formally added to the Review List in 2012 following the 1995 split

WESTERN Tanager (*Piranga ludoviciana*) One individual, Great Neck Point, Virginia Beach, [Knight] February 12-14, 2013, Accepted Category 1 (ph. †); 12th Coastal Plain record reviewed and accepted by VARCOM, seventh since 2004

PAINTED BUNTING (*Passerina ciris*) Two records as follows:

One adult male, Bena, Gloucester County [Hogge] February 7, 2012, also overwintering in 2010-2012 Accepted Category 1 (ph. †); Not on Review List, courtesy review for CBC

One female, Charlottesville, Albemarle County [Jones, Miller] December 21, 2012, Accepted Category 1 (ph. †); fifth Piedmont record

YELLOW-HEADED BLACKBIRD (*Xanthocephalus xanthocephalus*) One first year male, Roanoke Sewage Ponds, City of Roanoke [Davis, Bruno, Stanton, Foster] September 28-30, 2012, Accepted Category 1 (ph. †); eighth Mountains and Valleys record

WHITE-WINGED CROSSBILL (*Loxia leucoptera*) Three records as follows:

One individual, Glen Allen, Henrico County [Dixon, Lynch] January 23 – April 2, 2011, Accepted Category 1 (ph. †); no previous VARCOM records for Piedmont; according to Rottenborn and Brinkley (2007) there are only three previous records since 1985

Two individuals, Blandy Experimental Farm / State Arboretum of Virginia, Clarke County [Fox] November 16, 2012, Accepted Category 1 (ph. †); third Mountains and Valleys record

One female, Alexandria, [Bernick] December 30, 2012, Accepted Category 1 (ph. †); second Coastal Plain record documented since 2006

Submissions Not Accepted

ACKLING GOOSE (*Branta hutchinsii*) One individual, Crozet, Albemarle County, January 26, 2013

SANDHILL CRANE (*Grus canadensis*) One individual, Powhatan County, October 4, 2012

AMERICAN GOLDEN-PLOVER (*Pluvialis dominica*) One juvenile, Fishersville, Augusta County, September 13, 2012

GLAUCOUS-WINGED GULL (*Larus glaucescens*) One adult, Prince William Co.—Landfill, Prince William County, December 31, 2001

WESTERN KINGBIRD (*Tyrannus verticalis*) One individual, Nellysford, Nelson County, January 5, 2013

ALDER FLYCATCHER (*Empidonax alnorum*) One individual, Accotink Bay Wildlife Refuge, Fairfax County, May 16, 2013,

MACGILLIVRAY'S WARBLER (*Oporornis tolmiei*) One female, Dyke Marsh, Fairfax County, January 20-26, 2013

EUROPEAN GREENFINCH (*Chloris chloris*) One individual, Radford, Pulaski, November 9, 2012

Previously Accepted Record reclassified

SHORT-TAILED SHEARWATER (originally reviewed and accepted as *Puffinus tenuirostris*) One individual, Norfolk Canyon [Brinkley, Patteson, Turner] January 18, 1998, Accepted (†) and reclassified as Short-tailed/Sooty Shearwater (*Puffinus tenuirostris/griseus*)

References

Rottenborn S.C. and E.S. Brinkley (2007) Virginia's Avifauna: An Annotated Checklist. Fourth Edition

INFORMATION FOR CONTRIBUTORS

The Raven, the official journal of the Virginia Society of Ornithology (VSO), functions to publish original contributions and original review articles in ornithology relating to Virginia Birdlife. Electronic files are the required form for manuscript submission. Text files, prepared using a Mac OS-compatible word processing program or Microsoft® Word, should contain minimal formatting. Graphics (photos, maps, graphs, charts) should be sent as high quality EPS or JPEG files. An accompanying “cover letter” file should be emailed to the editor stating (1) article title, (2) author(s) full name(s) and email and home or institutional address(es) and, for multi-authored manuscripts, (3) the name of one author designated to carry out correspondence with the editor. If the manuscript or report is technical, a list of persons who would be appropriate reviewers should also be included in the “cover letter” file. Authors are encouraged to consult with the editor on additional matters of content, format, or style.

Most Manuscripts published in *The Raven* concern the distribution, abundance and migration of birds in Virginia. However, if there is evidence of summer residency in Virginia provided, manuscripts describing the distribution, abundance, life history, ecology and behavior of Virginia’s migrant birds on their wintering grounds are also welcome. Manuscripts on other ornithological topics, including Virginia-based historical reviews, bibliographical reviews, life histories, and behavioral observations, are also welcomed. In addition, the journal serves to publish the official proceedings of the VSO and other formal items pertaining to all aspects of the Society’s activities. *The Raven* may also publish articles pertaining to the activities of various public and private organizations engaged in biological and conservation work in Virginia. *The Raven* is a peer-reviewed journal; all feature articles and short communications are reviewed before a decision about acceptance for publication is made.

Format of *The Raven* generally follows guidelines set by the Council for Biology editors as outlined in the *CBE style manual, 6th edition, 1994* (Council of Biology Editors, Inc., 11250 Roger Bacon Dr., Reston, VA 20190). Recent volumes of *The Raven* should be inspected for style. Vernacular and scientific names of birds should be those in the most recent edition (and supplement) of the A.O.U.’s Check-list of North American Birds (www.aou.org/checklist/north). Scientific names should be italicized. All size, temperature and other measurements should be in metric units.

