VIRGINIA BALD EAGLE NEST AND PRODUCTIVITY SURVEY: YEAR 2011 REPORT

CENTER FOR CONSERVATION BIOLOGY
COLLEGE OF WILLIAM AND MARY
VIRGINIA COMMONWEALTH UNIVERSITY

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Front Cover: ***Adult bald eagle incubating in Northampton County. Photo by Bryan Watts.***

The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

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EXECUTIVE SUMMARY

By the late 1960s, the Virginia bald eagle breeding population had been decimated by eggshell thinning and associated low productivity. In 1977, the U. S. Fish and Wildlife Service formed the Chesapeake Bay Bald Eagle Recovery Team. This team was tasked with developing a plan for the recovery of the Bay population. As part of this process, state wildlife agencies assumed the responsibility for population monitoring. The Virginia Department of Game & Inland Fisheries along with the College of William & Mary initiated a systematic survey in the spring of 1977. Since that time, the annual bald eagle survey has become an essential element of a successful conservation strategy. Our objectives in continuing the Virginia bald eagle nest survey are 1) to monitor the recovery of the bald eagle in Virginia, 2) to document the status, distribution, and productivity of breeding bald eagles in Virginia, 3) to provide information to the government agencies charged with the management and protection of the Virginia bald eagle population, 4) to provide information to land holders about the status of bald eagles on their properties, and 5) to increase our understanding of bald eagle natural history in Virginia.

The Virginia bald eagle survey measures breeding activity and productivity via a standard 2-flight approach. The first flight is conducted between late February and mid-March to locate active nests. A high-wing Cessna 172 aircraft is used to systematically overfly the land surface at an altitude of approximately 100 m to detect eagle nests. All bald eagle nests detected are plotted on 7.5 min topographic maps and given a unique alpha-numeric code. Each nest is examined to determine its condition and activity status. The second survey flight is conducted from late April through mid-May to check active nests for productivity.

During the 2011 breeding season, the annual survey documented 726 occupied bald eagle territories in Virginia. This number represents a 6.2% increase over 2010. More than 130 new nests were mapped. Occupied territories were located within 45 counties and 10 independent cities. The majority of known territories continue to be concentrated within the Coastal Plain with less than 5% of pairs occurring in the piedmont and mountains. A total of 938 chicks were counted during the productivity flight. This is the highest chick production recorded during the 35-year history of the survey. The Virginia population continues to have tremendous reproductive momentum. Of 11,030 chicks documented in the past 35 years, 8.5% were produced in 2010 and 73.2% were produced since 2000. In general, this momentum is the combined result of an overall increase in the breeding population, the breeding success rate and the average brood size.

BACKGROUND

Context

No specific estimates of the Chesapeake Bay bald eagle population are available prior to the early 1900s. However, given the high productivity of Bay waters and the availability of extensive shallow-water foraging areas, it has been speculated that prior to European settlement the Chesapeake Bay may have supported one of the densest breeding populations of Bald Eagles outside of Alaska. By applying breeding densities from Alaska to the 13,000 km of Chesapeake shoreline, Fraser et al. (1991) suggest that the pristine Chesapeake may have supported in excess of 3,000 breeding pairs of bald eagles. A more recent investigation (Watts et al. 2006) shows significant spatial variation in colonization rates and breeding density that suggests carrying capacity varies throughout the Bay. One implication of these results is that the initial carrying capacity of the Bay may have been approximately half of that projected by the Fraser et al. (1991) study.

A decline in the Chesapeake Bay bald eagle population was evident to the ornithological community by the mid-1950s. The first aerial survey of eagle nests in the Chesapeake Bay was conducted in 1962 (Abbott 1963). The survey included approximately twice the land area covered by Tyrell in 1936. Survey results suggested that about 150 breeding pairs of eagles remained in the Chesapeake Bay in 1962. Annual aerial surveys continued to document a decline until the population reached an estimated low of 80-90 pairs in 1970 (Abbott 1978).

In 1977, the U. S. Fish and Wildlife Service formed the Chesapeake Bay Bald Eagle Recovery Team (Abbott 1977). This team was tasked with developing a plan for the recovery of the Bay population. As part of this process, state wildlife agencies assumed the responsibility for population monitoring. As the state agency responsible for wildlife management, The Virginia Game Commission (currently, The Virginia Department of Game & Inland Fisheries) is responsible for bald eagle monitoring and management in Virginia. Under contract to the state M. A. Byrd took over responsibility for the survey in 1977. Since 2008, The Center for Conservation Biology has assumed responsibility for the survey. The 2011 breeding season represents the 35th year of the comprehensive bald eagle breeding survey.

Objectives

Our objectives in continuing the Virginia bald eagle nest survey are:

1) to monitor the recovery of the bald eagle in Virginia
2) to document the status, distribution, and productivity of breeding bald eagles in Virginia

3) to provide information to the government agencies charged with the management and protection of the Virginia bald eagle population
4) to provide information to land holders about the status of bald eagles on their properties
5) to increase our understanding of bald eagle natural history in Virginia

METHODS

Study Area

The primary focus area for the Virginia bald eagle breeding survey includes the tidal reaches of Chesapeake Bay tributaries and the lower Delmarva Peninsula. All Chesapeake Bay tributaries in Virginia are systematically surveyed to the extent of tidal influence. These drainages encompass nearly all historic records of breeding eagles in Virginia and continue to support the vast majority of the population. Throughout the 1990s, several areas have been added to the core survey area including Back Bay/North Landing River area, Lake Drummond, Kerr Reservoir, Lake Chesdin, Swift Creek Reservoir, Diascund Reservoir, and Occoquan Reservoir. No attempts have been made to systematically survey the piedmont and mountain regions of Virginia. With the dramatic increase in inland reservoirs over the past few decades, it seems likely that breeding pairs remain undiscovered within these physiographic provinces. Nesting pairs known to occur within these regions have generally been discovered by agency biologists and the general public.

Survey

The Virginia bald eagle survey measures breeding activity and productivity via a standard 2-flight approach (Fraser et al. 1983). The first flight is conducted between late February and mid-March to locate active nests. A high-wing Cessna 172 aircraft is used to systematically overfly the land surface at an altitude of approximately 100 m to detect eagle nests. The aircraft is maneuvered systematically between the shoreline and a distance of approximately 1 km to cover the most probable breeding locations. All bald eagle nests detected are plotted on 7.5 min topographic maps and given a unique alpha-numeric code. Each nest is examined to determine its condition and activity status. A breeding territory is considered to be “occupied” if a pair of birds is observed in association with the nest and there is evidence of recent nest maintenance (e.g. well-formed cup, fresh lining, structural maintenance). Nests are considered to be “active” if a bird is observed in an incubating posture or if eggs or young are detected in the nest (Postupalsky 1974). The second survey flight is conducted from late April through mid-May to check active nests for productivity. A high-wing Cessna 172 is flown low over the nest allowing observers to examine nest contents. The number of eaglets present is recorded along with their approximate ages.

Survey plane over Hog Island Wildlife Management Area (lft) (photo by Bryan Watts). Typical isolated nest tree over marsh on Rappahannock River (rt) (photo by Bryan Watts).

Eaglets in nest on Corbin Hall Farm along the Rappahannock River (photo by Bryan Watts)

RESULTS

Breeding Population

A total of 726 bald eagle territories was determined to be occupied in Virginia during the 2011 breeding season (Table 1, see Appendices I – VIII for nesting details by geographic area). When compared to 2010, this represents a 6.2% increase in the breeding population (Table 2). This rate is below average compared to other years during the 35-year history of the survey (Figure 1). More than 130 new nests were mapped in 2011. Many of these new nests represent relocations within existing territories, although a substantial number of new territories were discovered.

Table 1. Summary of 2011 bald eagle survey results by geographic area. See methods for definitions of "occupied territory" and "active nest". Chicks/active nests and chicks/productive nests are mean values.

GEOGRAPHIC AREA	OCCUP TERRS	ACTIVE NESTS	CHICKS PROD	CHICKS/ ACT NEST[1]	CHICKS/ PROD NEST[1]
POTOMAC RIVER	156	134(131)	199(103)	1.52	1.93
RAPPAHAN. RIVER	165	149(147)	203(113)	1.38	1.80
YORK RIVER	71	66(66)	99(53)	1.50	1.87
JAMES RIVER	174	161(159)	253(134)	1.59	1.89
WESTERN SHORE	37	32(32)	46(28)	1.44	1.64
EASTERN SHORE	64	53(50)	58(40)	1.16	1.45
LOWER TIDEWATER	20	19(19)	34(17)	1.79	2.00
INLAND AREAS	39	32(30)	46(27)	1.53	1.70
TOTAL	**726**	**646**	**938**	**1.48**	**1.82**

[1]Calculated based on nests with known outcome. Success of 12 nests known to be active was not determined.

Growth between 2010 and 2011 was variable between geographic areas (Tables 1 and 2) with the largest gains documented on the James River and lower tidewater. As in 2010, documented breeding attempts increased in nearly all geographic areas. The majority of known territories continue to be concentrated within the coastal plain with less than 5% of known pairs occurring in the piedmont and mountains (it should be noted that the systematic survey is focused primarily on the coastal tributaries). Occupied territories were located within 45 counties and 10 independent cities (Table 3). Westmoreland, King George, Richmond, Accomack and Essex counties supported the highest number of pairs in the state. These 5 counties alone account for 35.5% of the state population.

Table 2. Summary of 2010 Bald Eagle survey results by geographic area. See methods for definitions of "occupied territory" and "active nest". Chicks/active nests and chicks/productive nests are mean values.

GEOGRAPHIC AREA	OCCUP TERRS	ACTIVE NESTS	CHICKS PROD	CHICKS/ ACT NEST[1]	CHICKS/ PROD NEST[1]
POTOMAC RIVER	141	137	183	1.43	1.78
RAPPAHAN. RIVER	164	148	189	1.30	1.73
YORK RIVER	68	63	88	1.44	1.87
JAMES RIVER	154	141	210	1.51	1.79
WESTERN SHORE	44	41	60	1.46	1.82
EASTERN SHORE	58	51	84	1.65	1.79
LOWER TIDEWATER	13	11	20	2.00	2.00
INLAND AREAS	42	35	49	1.63	1.75
TOTAL	**684**	**627**	**883**	**1.46**	**1.79**

[1]Calculated based on nests with known outcome. Success of 23 nests known to be active was not determined.

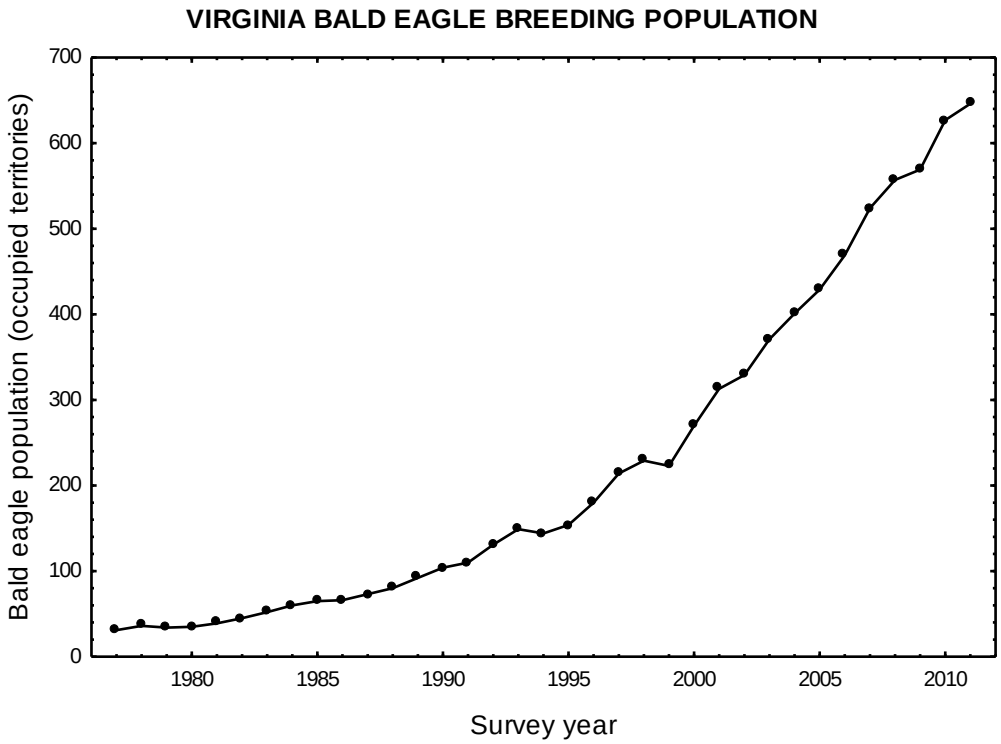

Figure 1. Annual population values (occupied territories) for the 35-year survey period (1977-2011).

Table 3. Summary of 2011 Bald Eagle survey results by jurisdiction. See methods for definitions of "occupied territory" and "active nest". Chicks/active nests and chicks/productive nests are mean values.

COUNTY	OCCUP TERRS	ACTIVE NESTS	CHICKS PROD	CHICKS/ ACT NESTS	CHICKS/ PROD NESTS
Counties					
Accomack	45	35(22)[1]	36	1.09	1.64
Albemarle	1	1	1	1.00	1.00
Amherst	1	1	2	2.00	2.00
Arlington	1	1(?)	?	-----	-----
Augusta	?	-----	-----	-----	-----
Bath	?	-----	-----	-----	-----
Bedford	?	-----	-----	-----	-----
Buckingham	?	-----	-----	-----	-----
Brunswick	?	-----	-----	-----	-----
Caroline	14	10(8)	16	1.60	2.00
Charles City	35	30(20)[2]	43	1.43	2.15
Charlotte	1	1(?)	?	-----	-----
Chesterfield	14	13(11)	22	1.69	2.00
Clarke	1	1(1)	2	2.00	2.00
Culpepper	?	-----	-----	-----	-----
Dinwiddie	1	1(1)	2	2.00	2.00
Essex	44	39(28)	54	1.38	1.93
Fairfax	20	18(17)	36	2.00	2.12
Fauquier	2	2(2)[2]	1	1.00	1.00
Fluvanna	1	1(?)[2]	-----	-----	-----
Gloucester	13	12(11)	20	1.67	1.82
Goochland	?	-----	-----	-----	-----
Halifax	2	0(-----)	-----	-----	-----
Hanover	3	3(2)	3	1.00	1.50
Henrico	10	10(10)	18	1.80	1.80
Highland	3	3(3)	4	1.33	1.33
Isle of Wight	12	12(10)	18	1.50	1.80
James City	34	32(28)	47	1.47	1.68
King and Queen	11	10(6)	11	1.10	1.83
King George	56	48(36)[2]	64	1.33	1.78
King William	19	16(13)	26	1.63	2.00
Lancaster	16	15(14)	27	1.80	1.93
Lee	?	-----	-----	-----	-----
Loudoun	1	1(0)	0	0.00	0.00
Louisa	?	-----	-----	-----	-----
Mathews	5	5(5)	10	2.00	2.00
Mecklenburg	12	11(10)	18	1.63	1.80
Middlesex	21	19(16)	25	1.32	1.56

Table 3. –continued-

COUNTY	OCCUP TERRS	ACTIVE NESTS	CHICKS PROD	CHICKS/ ACT NESTS	CHICKS/ PROD NESTS
Nelson	?	-----	-----	-----	-----
New Kent	22	20(17)	30	1.50	1.76
Northampton	19	19(17)2	31	1.72	1.94
Northumberland	26	22(17)	31	1.41	1.82
Nottoway	?	-----	-----	-----	-----
Page	?	-----	-----	-----	-----
Pittsylvania	?	-----	-----	-----	-----
Powhatan	1	1(1)	1	1.00	1.00
Prince Edward	1	1(0)	0	0.00	0.00
Prince George	25	23(20)	42	1.83	2.10
Prince William	11	9(8)	13	1.44	1.63
Pulaski	?	-----	-----	-----	-----
Richmond	45	42(33)[2]	56	1.33	1.70
Rockingham	2	2(1)	2	1.00	2.00
Shenandoah	?	-----	-----	-----	-----
Southampton	3	3(3)	6	2.00	2.00
Spotsylvania	?	-----	-----	-----	-----
Stafford	17	14(10)[2]	19	1.46	2.10
Surry	25	22(20)	35	1.59	1.75
Sussex	3	3(3)	5	1.67	1.67
Tazewell	?	-----	-----	-----	-----
Warren	1	0(-----)	-----	-----	-----
Washington	?	-----	-----	-----	-----
Westmoreland	68	60(45)	79	1.32	1.76
York	13	13(10)	19	1.46	1.90
Independent Cities					
Chesapeake	4	4(3)	6	1.50	2.00
Hampton	5	5(4)	7	1.40	1.75
Hopewell	1	1(1)	4	4.00	4.00
Newport News	6	6(5)	8	1.33	1.60
Norfolk	2	2(2)	5	2.50	2.50
Petersburg	1	1(1)	2	2.00	2.00
Poquoson	1	1(1)	2	2.00	2.00
Richmond	2	2(1)	2	1.00	2.00
Suffolk	8	7(6)	11	1.57	1.83
Virginia Beach	14	13(12)	23	1.77	1.92

[1]Results of 2 active nests unknown.
[2]Results of 1 active nests unknown.

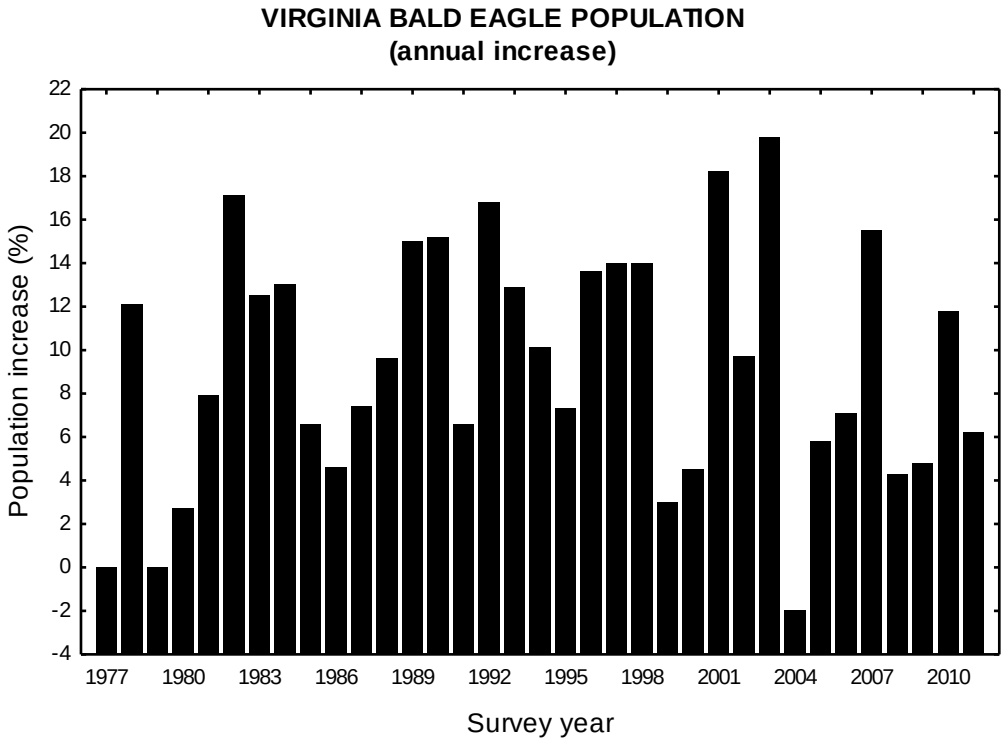

Figure 2. Change in the Virginia Bald Eagle breeding population 1977-2011.

Productivity

A total of 938 chicks were counted during the productivity flight (Table 1, see Appendices I – VIII for nesting details by geographic area). This is the highest chick production recorded during the 35-year survey. The Virginia population continues to have tremendous reproductive momentum. Of 11,030 chicks documented in the past 35 years, 8.5% were produced in 2011 and 73.2% were produced since 2000 (Figure 3). In general, this momentum is the combined result of an overall increase in the breeding population, the breeding success rate and the average brood size. Average reproductive rate (1.48 chicks/breeding attempt) was well above maintenance levels. Success rate and average brood size were both high in 2011. The percentage of active nests that were documented to be successful was 81.2% (Figure 4). Average brood size (chicks/productive nests) was 1.82 chicks/nest (Figure 5). These values continue the upward trend in reproductive performance observed over the past 15 years.

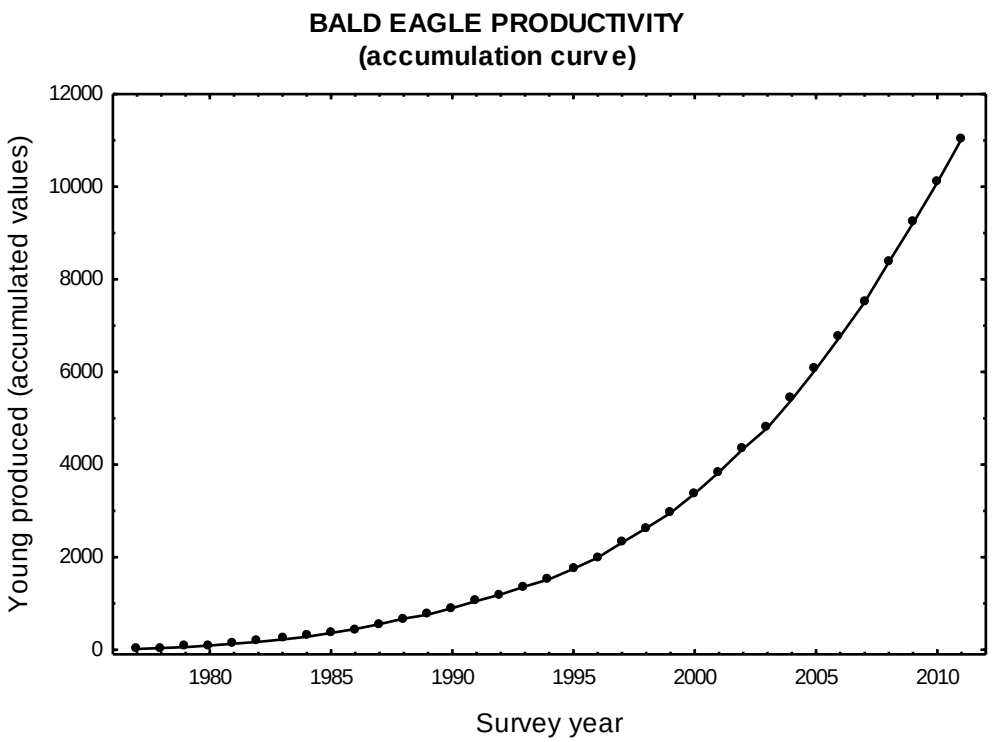

Figure 3. Productivity accumulation curve for bald eagles in Virginia (1977-2011). Total chicks produced over the 35-year study was 11,030.

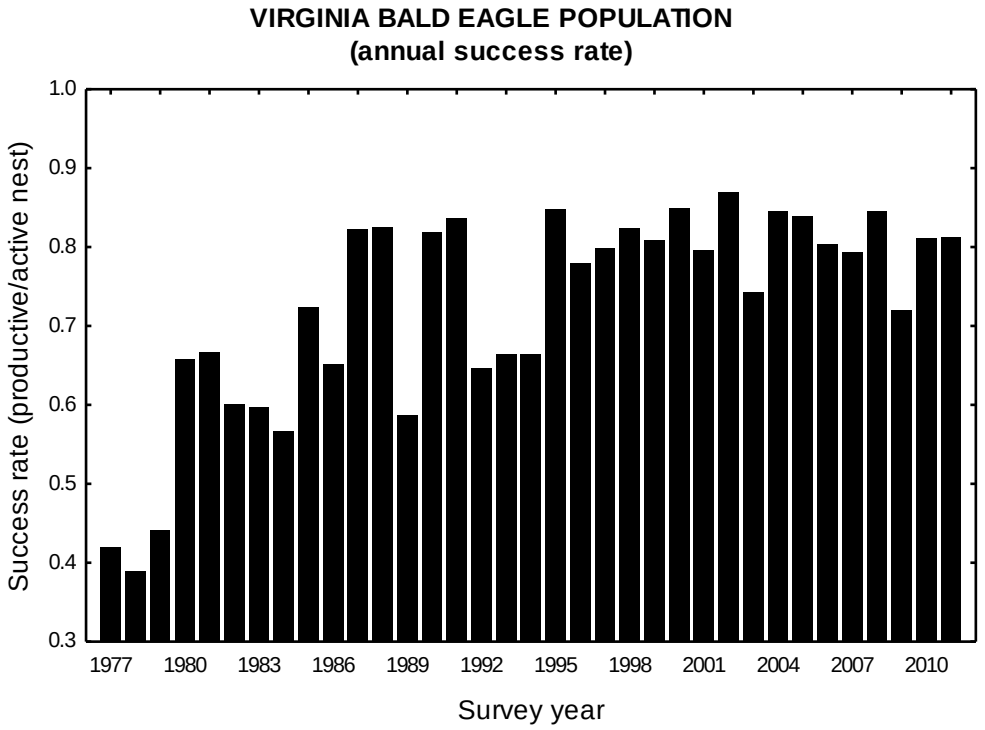

Figure 4. General trend in success rate for bald eagles in Virginia (1977-2011)

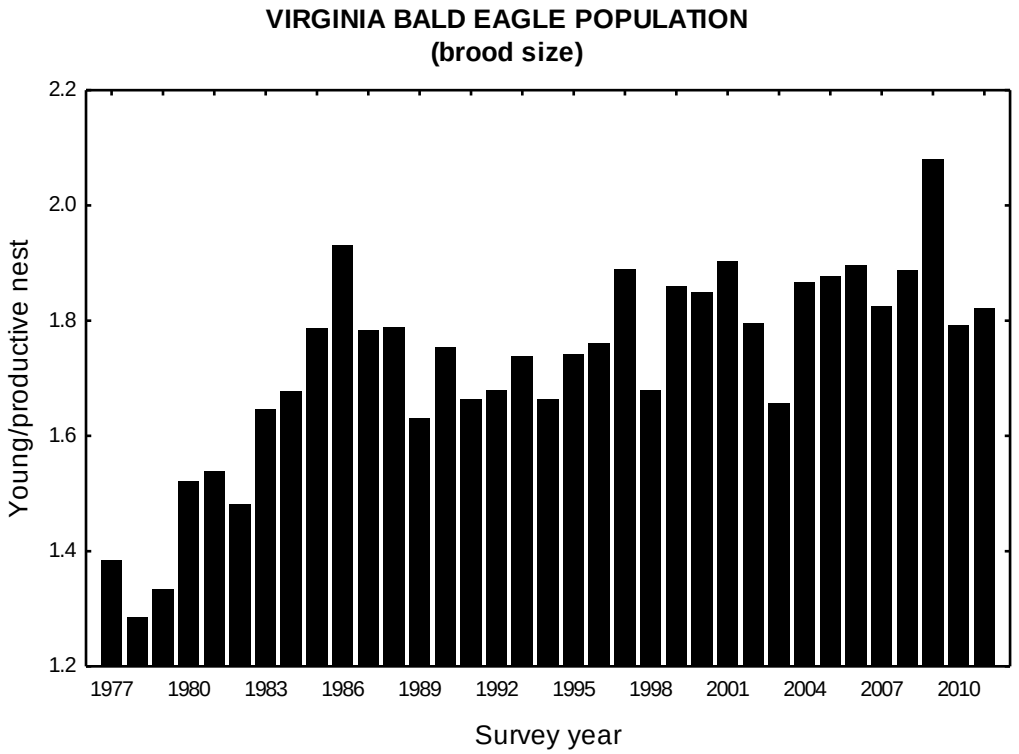

Figure 5. Temporal trend in average brood size for bald eagles in Virginia (1977-2011).

DISCUSSION

Bald eagles within Virginia have experienced a dramatic recovery since the 1970s. During the period of this survey, the average, annual rate of increase has been greater than 9%. This level of growth is comparable to that experienced by other populations within the portion of the breeding range where the species has been federally listed. During the 15-year period between 1982 and 1997, average growth rate within the conterminous United States was 8.6% (Buehler 2000).

Nesting success in the lower Chesapeake Bay may be the highest on record in North America. Since 1995, 74% of occupied territories produced at least one young. Success rates in many parts of North America have ranged between 60% and 65%, including the Pacific Northwest (Anthony et al. 1994, Watson et al. 2002) and the Rocky Mountains (Swenson et al. 1986, Kralovec et al. 1992). In Alaska (Stiedl et al. 1997) and Arizona (Driscoll et al. 1999) only half of nesting pairs produced young.

The reproductive rate in the lower Chesapeake Bay eagles is comparable to or greater than those of other regions. The highest reproductive rates have

been in Florida where nesting bald eagles produced 1.3 young per breeding pair during 1997-2001 (Millsap et al. 2004) and Wisconsin where eagles produced 1.3 young per occupied territory in the mid 1980s (Kozie and Anderson 1991). Productivity in the Rocky Mountain states has ranged from 1.0 to 1.2 young per nesting pair (Swenson et al 1986, Kralovec et al. 1992). Reproductive rates in the Pacific Northwest were 0.9 young per occupied nest (Anthony et al. 1994, Watson et al. 2002). In Alaska, productivity (0.8 yg/pair) was well below that in the Chesapeake Bay (Stiedl et al. 1997). The lowest reproductive rate (0.13 yg/pair) recorded in recent times was in Alaska on Prince of Wales Island (Anthony 2001). That low rate was attributed to high densities of nesting bald eagles. There is no indication in the Chesapeake Bay that nesting densities are reducing productivity rates yet.

A reproductive rate of 0.7 chicks/breeding attempt has been suggested to represent the threshold for population maintenance for bald eagles (Sprunt et al. 1973). Buehler et al. (1991a) estimated that 1.0 chicks/successful nest (equivalent to brood size) was required for population maintenance in the Bay. A reproductive rate of 1.1 chicks/breeding attempt was set as the recovery goal for the Chesapeake Bay population (Byrd et al. 1990). Documented rates for the Chesapeake Bay population reached an all-time low of 0.2 chicks/breeding attempt in 1962 (Abbott 1963). Productivity showed a steady increase throughout the late 1960s and early 1970s, reaching projected maintenance levels by the mid-1970s (Abbott 1978). The population has met or exceeded the productivity target outlined in the recovery plan in every year since 1985. The reproductive rate documented by Tyrrell in 1936 was nearly 1.5 chicks/breeding attempt. The population has achieved this rate in 10 of the 14 years between 1997 and 2010.

Given the tremendous forward momentum currently exhibited by the breeding population, it seems likely that bald eagles will reach saturation within the Bay in a relatively short period of time. No specific estimates of the Chesapeake Bay bald eagle population are available prior to the early 1900s. However, given the high productivity of Bay waters and the availability of extensive shallow-water foraging areas, it has been speculated that prior to European settlement the Chesapeake Bay may have supported one of the densest breeding populations of bald eagles outside of Alaska. By applying breeding densities from Alaska to the 13,000 km of Chesapeake shoreline, Fraser et al. (1996) suggested that the Chesapeake may have supported in excess of 3,000 breeding pairs of Bald Eagles prior to European Settlement. However, a recent investigation shows significant spatial variation in both colonization rates and breeding density suggesting that carrying capacity varies widely throughout the Bay (Watts et al. 2006). By fitting population growth data (1977 – 2002) for birds in portions of the lower Chesapeake Bay to a logistic curve, Watts et al. (2006) estimated that the population had reached approximately 70% of capacity. This suggests that the current carrying capacity of the Bay may be half of that estimated by Fraser al. (1996) for the pristine Bay

and that if recent growth rates continue, this population should reach that level within the next decade.

The availability of undeveloped waterfront property has become the dominant limiting factor for bald eagles in the Chesapeake Bay. Human activity is the best predictor of eagle distribution within the tidal portion of the Bay. Indicators of human activity such as housing and road density, shoreline use, and boating activity have been related to nest distribution (Watts et al. 1994), shoreline use (Buehler et al. 1991b, Watts and Whelan 1997), and the likelihood of nest abandonment (Therres et al. 1993) or recolonization (Watts, unpublished data). Since bald eagles began their most dramatic decline in the 1950s, the human population within the tidal reach of the Bay has increased by more than 50% (http://www.census.gov). A preliminary review of development occurring around eagle nests in the lower Chesapeake Bay shows that development had occurred in 55% of shoreline areas by the late 1980's (Byrd et al. 1990). Similarly, Buehler et al. (1991b) found that in northern areas of the Bay, 75.6% of the shoreline had developments within 500 m. Application of a habitat suitability model to the James River in 1991 revealed that more than 50% of the available area was not suitable for eagle breeding due to human use (Watts et al. 1994).

Increases in the human population around the Chesapeake Bay are expected to continue for the foreseeable future (Gray et al. 1988) likely causing further reductions in the capacity of the Bay to support bald eagles. In the long term, the size and stability of the breeding population will depend on both the bald eagle's capacity to cope with human activity and the management community's ability to protect suitable breeding habitat. In Florida, Millsap et al. (2004) found similar nest occupancy rates and brood sizes between suburban and rural nesting bald eagles. They defined suburban nest sites as those with >50% intensive human use within 1,500 m of the nest. Young per occupied nest site averaged 1.3 in suburban nests between 1996 and 2001. That is comparable to productivity of Chesapeake Bay bald eagles during the same time period. Though few in number as of 2001, bald eagles nesting in suburban situations are increasing in the Chesapeake Bay area. Over the past decade, the transition in the eagle population has been ongoing with an increasing number of pairs breeding in very disturbed settings. A recent investigation within the lower Chesapeake Bay has shown that success rate and productivity for pairs within the most human dominated settings are not statistically distinguishable from pairs in the most pristine settings (Watts 2006).

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Appendix I: Summary of 2011 Bald Eagle survey results for the Potomac River Drainage. See methods section for definition of "occupied territory" and "active nest". Nesting results unknown due to dense foliage during productivity flight.

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
AR0801	Arlington	Washington W.	Y	Y	UNKNOWN
AR0802	Arlington	???			NC
FF0002	Fairfax	Fort Belvoir	Y	Y	1
FF0401	Fairfax	Fort Belvoir	Y	Y	2
FF0403	Fairfax	Indian Head	Y	Y	3
FF0501	Fairfax	Fort Belvoir	Y	Y	1
FF0503	Fairfax	Falls Church			NC
FF0701	Fairfax	Fort Belvoir	Y	Y	1
FF0702	Fairfax	Indian Head	Y	Y	3
FF0703	Fairfax	Indian Head	Y	Y	2
FF0704	Fairfax	Fort Belvoir	Y	Y	3
FF0705	Fairfax	Fort Belvoir	Y	N	NA
FF0801	Fairfax	Fort Belvoir	Y	Y	0
FF0802	Fairfax	Mount Vernon	Y	Y	3
FF0901	Fairfax	Fort Belvoir	Y	Y	3
FF0902	Fairfax	Fort Belvoir	Y	Y	2
FF0903	Fairfax	Falls Church			NC
FF0904	Fairfax	Alexandria			NC
FF0905	Fairfax	Alexandria	Y	N	NA
FF1101	Fairfax	Fairfax	Y	Y	1
FF1102	Fairfax	Alexandria	Y	Y	2
FF9401	Fairfax	Fort Belvoir	Y	Y	3
FF9601	Fairfax	Fort Belvoir	Y	Y	2
FF9602	Fairfax	Fort Belvoir	Y	Y	2
FF9701	Fairfax	Fort Belvoir	Y	Y	2
KG0404	King George	King George	Y	Y	0
KG0405	King George	Dahlgren	Y	Y	1
KG0407	King George	Dahlgren	Y	Y	2
KG0507	King George	King George	Y	Y	1
KG0508	King George	King George	Y	N	NA
KG0509	King George	Dahlgren	Y	Y	2
KG0603	King George	Passapatanzy	Y	Y	1
KG0606	King George	Dahlgren	Y	Y	2
KG0607	King George	Mathias Pt	Y	Y	2
KG0703	King George	Passapatanzy	Y	Y	2
KG0704	King George	King George	Y	Y	3
KG0708	King George	Dahlgren	Y	Y	2
KG0709	King George	Dahlgren	Y	N	NA
KG0710	King George	Dahlgren	Y	Y	2

Appendix I: -continued-

KG0809	King George	Dahlgren	Y	Y	2
KG0810	King George	Passapatanzy	Y	Y	2
KG0811	King George	Passapatanzy	Y	Y	0
KG0904	King George	King George	Y	Y	0
KG0905	King George	Dahlgren	Y	Y	1
KG0906	King George	Dahlgren	Y	Y	3
KG1002	King George	Passapatanzy	Y	Y	2
KG1003	King George	King George	Y	Y	0
KG1005	King George	Mathias Pt	Y	N	NA
KG1006	King George	Dahlgren	Y	Y	2
KG1101	King George	Passapatanzy	Y	Y	UNKNOWN
KG1102	King George	Dahlgren	Y	Y	1
KG1106	King George	King George	Y	Y	0
KG1107	King George	Dahlgren	Y	Y	2
KG1108	King George	Dahlgren	Y	Y	2
KG1109	King George	Dahlgren	Y	N	NA
KG8202	King George	Rollins Fork	Y	N	NA
KG8703	King George	King George	Y	Y	2
KG8705	King George	Mathias Point	Y	N	NA
KG9002	King George	King George	Y	Y	2
KG9705	King George	Dahlgren	Y	Y	0
KG9905	King George	Dahlgren	Y	Y	0
ND0202	Northumberland	Lottsburg	Y	Y	0
ND0203	Northumberland	Heathsville	Y	Y	3
ND0302	Northumberland	Kinsale	Y	Y	2
ND0403	Northumberland	Burgess	Y	Y	2
ND0405	Northumberland	Heathsville	Y	Y	2
ND0501	Northumberland	Lottsburg	Y	Y	2
ND0701	Northumberland	Fleets Bay	Y	N	NA
ND0702	Northumberland	Reedville	Y	Y	2
ND0704	Northumberland	Burgess	Y	Y	0
ND0801	Northumberland	Fleets Bay	Y	Y	1
ND0803	Northumberland	Kinsale	Y	Y	0
ND0904	Northumberland	Kinsale	Y	Y	2
ND0905	Northumberland	St. George Isl	Y	Y	3
ND1006	Northumberland	Heathsville	Y	Y	0
ND1101	Northumberland	Kinsale	Y	Y	1
ND8601	Northumberland	Lancaster	Y	Y	2
PW0201	Prince William	Quantico	Y	Y	2
PW0601	Prince William	Quantico	Y	Y	2
PW0602	Prince William	Quantico	Y	Y	2
PW0701	Prince William	Quantico	Y	Y	1
PW0801	Prince William	Quantico	Y	Y	1

Appendix I: -continued-

PW0902	Prince William	Quantico	Y	N	NA
PW0903	Prince William	Quantico	Y	N	NA
PW1001	Prince William	Quantico	Y	Y	2
PW1101	Prince William	Quantico	Y	Y	1
PW1103	Prince William	Quantico	Y	Y	2
PW1104	Prince William	Quantico	Y	Y	0
ST0001	Stafford	Widewater	Y	Y	2
ST0002	Stafford	Joplin	Y	Y	UNKNOWN
ST0402	Stafford	Widewater	Y	Y	2
ST0501	Stafford	Widewater	Y	Y	3
ST0503	Stafford	Passapatanzy	Y	Y	0
ST0504	Stafford	Passapatanzy	Y	N	NA
ST0701	Stafford	Widewater	Y	Y	0
ST0702	Stafford	Passapatanzy	Y	Y	2
ST0902	Stafford	Widewater	Y	Y	3
ST0903	Stafford	Fredericksburg	Y	Y	2
ST1001	Stafford	Quantico	Y	Y	0
ST1002	Stafford	Widewater	Y	N	NA
ST1003	Stafford	Widewater	Y	Y	0
ST1004	Stafford	Passapatanzy	Y	Y	2
ST1101	Stafford	Quantico	Y	Y	1
ST1102	Stafford	Quantico	Y	N	NA
ST9603	Stafford	Passapatanzy	Y	Y	2
WE0003	Westmoreland	Kinsale	Y	Y	1
WE0006	Westmoreland	Piney Pt	Y	Y	2
WE0007	Westmoreland	Kinsale	Y	Y	2
WE0104	Westmoreland	Colonial Beach S	Y	Y	3
WE0112	Westmoreland	Machodac	Y	Y	0
WE0310	Westmoreland	Stratford Hall	Y	Y	1
WE0311	Westmoreland	Machodac	Y	Y	3
WE0312	Westmoreland	St Clements Isl	Y	Y	1
WE0508	Westmoreland	Machodac	Y	Y	2
WE0509	Westmoreland	St Clements Isl	Y	N	NA
WE0603	Westmoreland	Colonial Beach S.	Y	Y	2
WE0604	Westmoreland	Machodac	Y	Y	1
WE0607	Westmoreland	Machodac	Y	Y	2
WE0610	Westmoreland	Colonial Beach S	Y	Y	3
WE0702	Westmoreland	Rollins Fork	Y	Y	3
WE0703	Westmoreland	Rollins Fork	Y	Y	0
WE0704	Westmoreland	Colonial Beach S	Y	Y	1
WE0705	Westmoreland	Colonial Beach S	Y	Y	2
WE0706	Westmoreland	St Clements Isl	Y	Y	3
WE0801	Westmoreland	Kinsale	Y	Y	0

Appendix I: -continued-

WE0802	Westmoreland	Kinsale	Y	Y	2
WE0803	Westmoreland	Kinsale	Y	Y	1
WE0804	Westmoreland	Kinsale	Y	Y	2
WE0807	Westmoreland	Colonial Beach S	Y	Y	2
WE0808	Westmoreland	Colonial Beach S	Y	Y	0
WE0809	Westmoreland	Colonial Beach S	Y	N	NA
WE0810	Westmoreland	Stratford Hall	Y	Y	2
WE0813	Westmoreland	St Clements Isl	Y	Y	2
WE0901	Westmoreland	Colonial Beach N	Y	N	NA
WE0904	Westmoreland	Stratford Hall	Y	Y	1
WE0905	Westmoreland	Machodac	Y	Y	2
WE0906	Westmoreland	St. Clements Isl	Y	Y	2
WE0907	Westmoreland	Machodac	Y	Y	2
WE0908	Westmoreland	Machodac	Y	Y	2
WE0909	Westmoreland	Kinsale	Y	Y	0
WE1002	Westmoreland	Machodac	Y	Y	0
WE1003	Westmoreland	Machodac	Y	Y	1
WE1004	Westmoreland	Machodac	Y	Y	1
WE1005	Westmoreland	Kinsale	Y	Y	2
WE1006	Westmoreland	Kinsale	Y	Y	0
WE1104	Westmoreland	Colonial Beach N	Y	N	NA
WE1105	Westmoreland	Colonial Beach S	Y	N	NA
WE1106	Westmoreland	Colonial Beach S	Y	N	NA
WE1108	Westmoreland	Colonial Beach S	Y	Y	0
WE1109	Westmoreland	Colonial Beach S	Y	Y	0
WE1110	Westmoreland	Colonial Beach S	Y	Y	0
WE1111	Westmoreland	Stratford Hall	Y	Y	1
WE1112	Westmoreland	Montross	Y	Y	3
WE1113	Westmoreland	Machodac	Y	Y	2
WE1114	Westmoreland	Kinsale	Y	Y	2
WE9003	Westmoreland	Colonial Beach S	Y	N	NA
WE9102	Westmoreland	Stratford Hall	Y	Y	2
WE9503	Westmoreland	Rollins Fork	Y	N	NA
WE9605	Westmoreland	Stratford Hall	Y	Y	2
WE9807	Westmoreland	Kinsale	Y	Y	0

Appendix II: Summary of 2011 Bald Eagle survey results for the Rappahannock River Drainage. See methods section for definition of "occupied territory" and "active nest".

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
CA0002	Caroline	Rapp Academy	Y	Y	1
CA0201	Caroline	Port Royal	Y	N	NA
CA0401	Caroline	Supply	Y	N	NA
CA0402	Caroline	Supply			NC
CA0403	Caroline	Bowling Green	Y	Y	2
CA0404	Caroline	Port Royal	Y	N	NA
CA0502	Caroline	Bowling Green			NC
CA0802	Caroline	Port Royal			NC
CA0901	Caroline	Supply			NC
CA0902	Caroline	Port Royal	Y	Y	2
CA1001	Caroline	Port Royal	Y	Y	0
CA1002	Caroline	Port Royal	Y	Y	2
CA1101	Caroline	Rollins Fork	Y	Y	2
CA1102	Caroline	Port Royal	Y	Y	2
CA9002	Caroline	Port Royal	Y	Y	3
CA9003	Caroline	Rapp Academy	Y	Y	2
CA9502	Caroline	Rapp Academy	Y	Y	0
CA9603	Caroline	Supply	Y	N	NA
ES0003	Essex	Champlain	Y	Y	1
ES0105	Essex	Champlain	Y	Y	0
ES0106	Essex	Champlain	Y	Y	1
ES0204	Essex	Loretto	Y	Y	1
ES0301	Essex	Dunnsville	Y	Y	1
ES0302	Essex	Tappahannock	Y	Y	2
ES0306	Essex	Rollins Fork	Y	Y	0
ES0402	Essex	Dunnsville	Y	Y	0
ES0408	Essex	Champlain	Y	Y	2
ES0411	Essex	Loretto	Y	Y	0
ES0412	Essex	Loretto	Y	Y	0
ES0504	Essex	Mount Landing	Y	Y	3
ES0505	Essex	Champlain	Y	Y	0
ES0509	Essex	Rollins Fork	Y	Y	3
ES0701	Essex	Morattico	Y	N	NA
ES0705	Essex	Champlain	Y	Y	2
ES0706	Essex	Champlain	Y	Y	2
ES0707	Essex	Champlain	Y	Y	2
ES0708	Essex	Loretto	Y	Y	2
ES0709	Essex	Rollins Fork	Y	Y	2
ES0801	Essex	Dunnsville	Y	Y	2

Appendix II: -continued-

ES0803	Essex	Dunnsville	Y	Y	0
ES0804	Essex	Dunnsville	Y	Y	2
ES0810	Essex	Rollins Fork	Y	Y	0
ES0901	Essex	Tappahannock	Y	Y	2
ES0902	Essex	Dunnsville	Y	Y	0
ES0903	Essex	Tappahannock	Y	Y	2
ES0904	Essex	Mount Landing	Y	N	NA
ES1001	Essex	Tappahannock	Y	Y	3
ES1002	Essex	Mount Landing	Y	Y	2
ES1003	Essex	Mount Landing	Y	N	NA
ES1004	Essex	Mount Landing	Y	Y	2
ES1005	Essex	Champlain	Y	Y	2
ES1006	Essex	Champlain	Y	N	NA
ES1007	Essex	Champlain	Y	Y	2
ES1008	Essex	Champlain	Y	Y	2
ES1010	Essex	Rollins Fork	Y	N	NA
ES1011	Essex	Loretto	Y	Y	0
ES1101	Essex	Tappahannock	Y	Y	0
ES1102	Essex	Champlain	Y	Y	1
ES1103	Essex	Loretto	Y	Y	2
ES1104	Essex	Loretto	Y	Y	2
ES1106	Essex	Champlain	Y	Y	2
ES7901	Essex	Morattico	Y	Y	2
KG0201	King George	Port Royal	Y	Y	2
KG0301	King George	Passapatanzy	Y	Y	1
KG0302	King George	Rollins Fork	Y	Y	1
KG0501	King George	Port Royal	Y	Y	2
KG0503	King George	Port Royal	Y	Y	2
KG0506	King George	Rollins Fork	Y	Y	2
KG0601	King George	Port Royal	Y	Y	1
KG0602	King George	Rollins Fork	Y	Y	0
KG0701	King George	Port Royal	Y	Y	0
KG0702	King George	Rollins Fork	Y	Y	1
KG0802	King George	Port Royal	Y	Y	1
KG0803	King George	Port Royal	Y	Y	0
KG0804	King George	Rollins Fork	Y	Y	1
KG0805	King George	Rollins Fork	Y	Y	3
KG0901	King George	Rapp Academy	Y	N	NA
KG0902	King George	Rollins Fork	Y	Y	2
KG1103	King George	Port Royal	Y	Y	2
KG1104	King George	Port Royal	Y	N	NA
KG1105	King George	Rollins Fork	Y	Y	0
KG9708	King George	Rollins Fork	Y	Y	2

Appendix II: -continued-

LA0102	Lancaster	Irvington	Y	Y	2
LA0402	Lancaster	Lively	Y	N	NA
LA0403	Lancaster	Lively	Y	Y	2
LA0404	Lancaster	Irvington	Y	Y	2
LA0407	Lancaster	Urbanna	Y	Y	2
LA0602	Lancaster	Lively	Y	Y	2
LA0603	Lancaster	Irvington	Y	Y	1
LA0701	Lancaster	Urbanna	Y	Y	2
LA0901	Lancaster	Lively	Y	Y	2
LA0902	Lancaster	Irvington	Y	Y	2
LA0903	Lancaster	Lively	Y	Y	1
LA1001	Lancaster	Morattico	Y	Y	2
LA1003	Lancaster	Urbanna	Y	Y	0
LA1004	Lancaster	Irvington	Y	Y	2
LA1101	Lancaster	Lively	Y	Y	2
LA1102	Lancaster	Lancaster	Y	Y	3
MI0103	Middlesex	Morattico	Y	Y	1
MI0204	Middlesex	Church View	Y	Y	2
MI0301	Middlesex	Wilton	Y	Y	0
MI0503	Middlesex	Church View	Y	Y	2
MI0602	Middlesex	Urbanna	Y	Y	1
MI0604	Middlesex	Church View	Y	Y	3
MI0804	Middlesex	Wilton	Y	Y	2
MI0901	Middlesex	Wilton	Y	N	NA
MI1001	Middlesex	Urbanna	Y	Y	0
MI1002	Middlesex	Church View	Y	Y	1
MI1006	Middlesex	Church View	Y	Y	3
MI1101	Middlesex	Urbanna	Y	Y	1
MI1103	Middlesex	Church View	Y	Y	UNKNOWN
RI0003	Richmond		Y	Y	2
RI0202	Richmond	Montross	Y	Y	2
RI0208	Richmond	Tappahannock	Y	Y	0
RI0303	Richmond	Tappahannock	Y	Y	2
RI0308	Richmond	Haynesville	Y	Y	2
RI0311	Richmond	Haynesville	Y	Y	1
RI0507	Richmond	Tappahannock	Y	Y	0
RI0510	Richmond	Morattico	Y	Y	1
RI0608	Richmond	Haynesville	Y	Y	1
RI0609	Richmond	Morattico	Y	N	NA
RI0705	Richmond	Tappahannock	Y	Y	2
RI0708	Richmond	Lively	Y	Y	2
RI0803	Richmond	Montross	Y	N	NA
RI0804	Richmond	Tappahannock	Y	Y	2

Appendix II: -continued-

RI0805	Richmond	Montross	Y	Y	2
RI0806	Richmond	Montross	Y	Y	1
RI0807	Richmond	Tappahannock	Y	Y	2
RI0811	Richmond	Tappahannock	Y	Y	3
RI0902	Richmond	Champlain	Y	Y	UNKNOWN
RI0903	Richmond	Tappahannock	Y	Y	1
RI0904	Richmond	Tappahannock	Y	Y	1
RI0906	Richmond	Morattico	Y	Y	1
RI0908	Richmond	Champlain	Y	Y	3
RI1001	Richmond	Mount Landing	Y	Y	0
RI1002	Richmond	Tappahannock	Y	Y	2
RI1003	Richmond	Tappahannock	Y	Y	1
RI1004	Richmond	Tappahannock	Y	Y	2
RI1005	Richmond	Tappahannock	Y	Y	0
RI1006	Richmond	Tappahannock	Y	Y	1
RI1008	Richmond	Morattico	Y	Y	0
RI1009	Richmond	Morattico	Y	Y	0
RI1101	Richmond	Champlain	Y	Y	0
RI1102	Richmond	Montross	Y	Y	2
RI1103	Richmond	Tappahannock	Y	Y	1
RI1104	Richmond	Haynesville	Y	Y	2
RI1105	Richmond	Morattico	Y	Y	0
RI1106	Richmond	Morattico	Y	Y	1
RI1107	Richmond	Tappahannock	Y	Y	2
RI8102	Richmond	Champlain	Y	Y	2
RI8703	Richmond	Tappahannock	Y	Y	2
RI9003	Richmond	Champlain	Y	Y	0
RI9603	Richmond	Morattico	Y	Y	3
RI9701	Richmond	Montross	Y	Y	2
RI9801	Richmond	Champlain	Y	N	NA
RI9903	Richmond	Lively	Y	Y	2
WE0101	Westmoreland	Rollins Fork	Y	Y	1
WE0102	Westmoreland	Loretto	Y	Y	1
WE0302	Westmoreland	Champlain	Y	Y	1
WE0316	Westmoreland	Haynesville	Y	Y	1
WE0401	Westmoreland	Rollins Fork	Y	Y	1
WE0402	Westmoreland	Rollins Fork	Y	Y	2
WE0501	Westmoreland	Champlain	Y	Y	2
WE0601	Westmoreland	Champlain	Y	Y	0
WE1001	Westmoreland	Champlain	Y	Y	2

Appendix II: -continued-

WE1101	Westmoreland	Loretto	Y	Y	0
WE1102	Westmoreland	Champlain	Y	Y	0
WE1103	Westmoreland	Champlain	Y	Y	0
WE8801	Westmoreland	Champlain	Y	Y	0

Appendix III: Summary of 2011 Bald Eagle survey results for the York River Drainage. See methods section for definition of "occupied territory" and "active nest".

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
GL0401	Gloucester	Gressitt	Y	Y	1
GL0502	Gloucester	Gressitt	Y	Y	0
GL0701	Gloucester	Clay Bank	Y	Y	2
GL0702	Gloucester	Clay Bank	Y	Y	2
GL1001	Gloucester	Gressitt	Y	Y	3
GL1101	Gloucester	Gressitt	Y	Y	2
GL1102	Gloucester	Achilles	Y	Y	2
GL1103	Gloucester	Achilles	Y	Y	1
HN0501	Hanover	Hanover	Y	Y	2
HN0801	Hanover	Hanover	Y	Y	0
HN1001	Hanover	Ashland	Y	Y	1
JC0001	James City	Gressitt	Y	Y	1
JC0502	James City	Williamsburg	Y	Y	2
JC0704	James City	Williamsburg	Y	Y	2
JC0805	James City	Toano	Y	Y	1
JC0904	James City	Gressitt	Y	Y	2
KQ0302	King & Queen	K&Q Courthouse	Y	Y	0
KQ0502	King & Queen	K&Q Courthouse	Y	Y	1
KQ0601	King & Queen	West Point	Y	Y	2
KQ0701	King & Queen	West Point	Y	Y	3
KQ1001	King & Queen	King William	Y	Y	3
KQ1004	King & Queen	Gressitt	Y	Y	0
KQ1101	King & Queen	K&Q Courthouse	Y	Y	1
KQ1102	King & Queen	Gressitt	Y	Y	0
KW0201	King William	K&Q Courthouse	Y	Y	0
KW0302	King William	West Point	Y	Y	3
KW0401	King William	New Kent	Y	Y	2
KW0501	King William	Tunstall	Y	Y	0
KW0503	King William	King William	Y	Y	1
KW0504	King William	King William	Y	Y	2
KW0601	King William	New Kent	Y	Y	2
KW0602	King William	K&Q Courthouse	Y	Y	3
KW0701	King William	West Point	Y	N	NA
KW0703	King William	K&Q Courthouse	Y	Y	2
KW0801	King William	New Kent	Y	Y	2
KW0802	King William	West Point	Y	N	NA
KW0803	King William	West Point	Y	Y	2
KW0804	King William	Tunstall	Y	Y	0
KW0901	King William	Tunstall	Y	Y	2

Appendix III: -continued-

KW1002	King William	West Point	Y	N	NA
KW1101	King William	K&Q Courthouse	Y	Y	2
KW8801	King William	New Kent	Y	Y	1
KW9901	King William	K&Q Courthouse	Y	Y	2
NK0102	New Kent	New Kent	Y	Y	3
NK0103	New Kent	Tunstall	Y	Y	0
NK0302	New Kent	Toano	Y	Y	2
NK0303	New Kent	Toano	Y	Y	2
NK0602	New Kent	New Kent	Y	Y	2
NK0703	New Kent	West Point	Y	Y	1
NK0704	New Kent	West Point	Y	Y	2
NK0705	New Kent	Tunstall	Y	Y	1
NK0801	New Kent	New Kent	Y	N	NA
NK0802	New Kent	Tunstall	Y	Y	2
NK1002	New Kent	Toano	Y	Y	2
NK1102	New Kent	Toano	Y	N	NA
NK9101	New Kent	New Kent	Y	Y	2
NK9802	New Kent	Toano	Y	Y	0
NK9804	New Kent	New Kent	Y	Y	1
YK0204	York	Williamsburg	Y	Y	1
YK0301	York	Clay Bank	Y	Y	2
YK0403	York	Williamsburg	Y	Y	0
YK0601	York	Williamsburg	Y	Y	2
YK0701	York	Yorktown	Y	Y	2
YK0703	York	Williamsburg	Y	Y	1
YK1001	York	Poquoson W	Y	Y	2
YK1003	York	Poquoson W	Y	Y	2
YK1101	York	Poquoson W	Y	Y	0
YK1102	York	Williamsburg	Y	Y	3
YK1103	York	Williamsburg	Y	Y	0
YK1104	York	Clay Bank	Y	Y	2
YK1105	York	Yorktown	Y	Y	2

Appendix IV: Summary of 2011 Bald Eagle survey results for the James River Drainage. See methods section for definition of "occupied territory" and "active nest".

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
CC0102	Charles City	Charles City	Y	N	NA
CC0303	Charles City	Westover	Y	N	NA
CC0304	Charles City	Westover	Y	Y	0
CC0305	Charles City	Charles City	Y	Y	1
CC0402	Charles City	Westover	Y	Y	0
CC0501	Charles City	Westover	Y	Y	3
CC0503	Charles City	Brandon	Y	Y	2
CC0504	Charles City	Walkers	Y	Y	0
CC0601	Charles City	Hopewell	Y	Y	2
CC0604	Charles City	Charles City	Y	Y	3
CC0607	Charles City	Prov Forge	Y	Y	2
CC0801	Charles City	Westover	Y	N	NA
CC0802	Charles City	Brandon	Y	Y	3
CC0803	Charles City	Walker	Y	Y	1
CC0901	Charles City	Westover	Y	Y	0
CC0902	Charles City	Charles City	Y	Y	2
CC0903	Charles City	Brandon	Y	N	NA
CC0904	Charles City	Prov Forge	Y	Y	2
CC1001	Charles City	Westover	Y	Y	2
CC1002	Charles City	Charles City	Y	Y	0
CC1004	Charles City	Charles City	Y	Y	0
CC1005	Charles City	Claremont	Y	Y	3
CC1006	Charles City	Brandon	Y	Y	2
CC1007	Charles City	Brandon	Y	Y	2
CC1101	Charles City	Westover	Y	Y	UNKNOWN
CC1102	Charles City	Westover	Y	Y	0
CC1103	Charles City	Claremont	Y	N	NA
CC1104	Charles City	Brandon	Y	Y	3
CC1105	Charles City	Brandon	Y	Y	1
CC1106	Charles City	Walker	Y	Y	2
CC1107	Charles City	Walker	Y	Y	3
CC1108	Charles City	Brandon	Y	Y	1
CC9102	Charles City	Charles City	Y	Y	2
CC9602	Charles City	Brandon	Y	Y	1
CC9904	Charles City	Charles City	Y	Y	0
CD0202	Chesterfield	Hopewell	Y	Y	2
CD0402	Chesterfield	Dutch Gap	Y	Y	2
CD0403	Chesterfield	Dutch Gap	Y	Y	0
CD0602	Chesterfield	Hopewell	Y	Y	2

Appendix IV: -continued-

CD0604	Chesterfield	Hopewell	Y	Y	2
CD0701	Chesterfield	Dutch Gap	Y	Y	3
CD0802	Chesterfield	Hopewell	Y	Y	2
CD0804	Chesterfield	Hopewell	Y	Y	2
CD1101	Chesterfield	Hopewell	Y	Y	1
CD1102	Chesterfield	Hopewell	Y	Y	2
CD1103	Chesterfield	Dutch Gap	Y	Y	0
CD9802	Chesterfield	Hopewell	Y	Y	2
HE0301	Henrico	Hopewell	Y	Y	2
HE0601	Henrico	Hopewell	Y	Y	2
HE0602	Henrico	Hopewell	Y	Y	2
HE0604	Henrico	Dutch Gap	Y	Y	2
HE0801	Henrico	Drewrys Bluff	Y	Y	1
HE0901	Henrico	Hopewell	Y	Y	2
HE1001	Henrico	Hopewell	Y	Y	2
HE1101	Henrico	Dutch Gap	Y	Y	2
HE9501	Henrico	Roxbury	Y	Y	1
HE9902	Henrico	Drewrys Bluff	Y	Y	2
HO0401	Hopewell	Hopewell	Y	Y	4
IW0201	Isle of Wight	Bacons Castle	Y	Y	0
IW0401	Isle of Wight	Benns Church	Y	Y	1
IW0501	Isle of Wight	Mulberry Island	Y	Y	1
IW0701	Isle of Wight	Benns Church	Y	Y	2
IW0702	Isle of Wight	Mulberry Island	Y	Y	1
IW0802	Isle of Wight	Hog Island	Y	Y	2
IW0902	Isle of Wight	Bacons Castle	Y	Y	2
IW1001	Isle of Wight	Smithfield	Y	Y	2
IW1002	Isle of Wight	Mulberry Island	Y	Y	0
IW1101	Isle of Wight	Benns Church	Y	Y	2
IW8601	Isle of Wight	Bacons Castle	Y	Y	2
IW9601	Isle of Wight	Benns Church	Y	Y	3
JC0101	James City	Surry	Y	Y	2
JC0105	James City	Surry	Y	Y	2
JC0201	James City	Norge	Y	Y	2
JC0401	James City	Hog Island	Y	Y	0
JC0403	James City	Norge	Y	Y	1
JC0404	James City	Norge	Y	Y	1
JC0501	James City	Hog Island	Y	Y	2
JC0503	James City	Yorktown	Y	Y	1
JC0601	James City	Norge	Y	N	NA
JC0604	James City	Hog Island	Y	Y	1
JC0605	James City	Hog Island	Y	Y	2
JC0701	James City	Norge	Y	Y	1

Appendix IV: -continued-

JC0702	James City	Surry	Y	Y	1
JC0703	James City	Yorktown	Y	Y	3
JC0801	James City	Norge	Y	Y	1
JC0802	James City	Norge	Y	Y	0
JC0902	James City	Norge	Y	Y	3
JC0903	James City	Surry	Y	Y	3
JC0905	James City	Hog Island	Y	Y	1
JC1001	James City	Norge	Y	Y	1
JC1002	James City	Norge	Y	Y	3
JC1101	James City	Norge	Y	Y	3
JC1102	James City	Norge	Y	N	NA
JC1103	James City	Norge	Y	Y	2
JC1104	James City	Norge	Y	Y	2
JC1105	James City	Hog Island	Y	Y	1
JC1106	James City	Hog Island	Y	Y	0
JC1107	James City	Hog Island	Y	Y	0
JC1109	James City	Norge	Y	Y	UNKNOWN
NK0701	New Kent	Walkers	Y	Y	0
NK0702	New Kent	Walkers	Y	Y	1
NK0902	New Kent	Walker	Y	Y	1
NK0903	New Kent	Walker	Y	Y	2
NK0904	New Kent	Prov Forge	Y	Y	2
NK1001	New Kent	Prov Forge	Y	Y	2
NK1103	New Kent	Walker	Y	Y	2
NN0202	Newport News	Newpt News N	Y	Y	1
NN0301	Newport News	Mulberry Island	Y	Y	2
NN0601	Newport News	Yorktown	Y	Y	2
NN0801	Newport News	Mulberry Island	Y	Y	2
NN0802	Newport News	Mulberry Island	Y	Y	1
NN1001	Newport News	Mulberry Island	Y	Y	0
PB0401	Petersburg	Prince George	Y	Y	2
PG0002	Prince George	Savedge	Y	Y	1
PG0102	Prince George	Savedge	Y	Y	0
PG0401	Prince George	Claremont	Y	Y	2
PG0502	Prince George	Westover	Y	Y	2
PG0602	Prince George	Charles City	Y	Y	3
PG0603	Prince George	Westover	Y	Y	2
PG0606	Prince George	Westover	Y	Y	1
PG0702	Prince George	Charles City	Y	Y	2
PG0704	Prince George	Westover	Y	Y	3
PG0802	Prince George	Westover	Y	N	NA
PG0901	Prince George	Charles City	Y	Y	1
PG0902	Prince George	Westover	Y	Y	3

Appendix IV: -continued-

PG1001	Prince George	Charles City	Y	Y	0
PG1002	Prince George	Charles City	Y	Y	2
PG1003	Prince George	Westover	Y	Y	2
PG1005	Prince George	Charles City	Y	Y	2
PG1101	Prince George	Brandon	Y	Y	3
PG1102	Prince George	Brandon	Y	Y	1
PG1103	Prince George	Brandon	Y	N	NA
PG1104	Prince George	Westover	Y	Y	3
PG1105	Prince George	Hopewell	Y	Y	0
PG1106	Prince George	Hopewell	Y	Y	3
PG9101	Prince George	Charles City	Y	Y	1
PG9201	Prince George	Westover	Y	Y	3
PG9401	Prince George	Westover	Y	Y	2
PO9801	Powhatan	Midlothian	Y	Y	1
RM0101	Richmond City	Bonair	Y	Y	2
RM1001	Richmond City	Richmond	Y	Y	0
SK0301	Suffolk	Windsor	Y	N	NA
SK0401	Suffolk	Newpt News S	Y	Y	2
SK0601	Suffolk	Chuckatuck	Y	Y	2
SK0901	Suffolk	Newport News S	Y	Y	2
SK1101	Suffolk	Chuckatuck	Y	Y	1
SK1103	Suffolk	Chuckatuck	Y	Y	0
SK1104	Suffolk	Chuckatuck	Y	Y	2
SK9101	Suffolk	Chuckatuck	Y	Y	2
SU0303	Surry	Claremont	Y	Y	3
SU0402	Surry	Hog Island	Y	Y	2
SU0406	Surry	Surry	Y	Y	2
SU0501	Surry	Hog Island	Y	Y	0
SU0502	Surry	Surry	Y	Y	2
SU0504	Surry	Surry	Y	Y	1
SU0701	Surry	Hog Island	Y	Y	2
SU0702	Surry	Surry	Y	Y	1
SU0703	Surry	Savedge	Y	Y	2
SU0803	Surry	Surry	Y	Y	2
SU0901	Surry	Hog Island	Y	Y	2
SU0903	Surry	Hog Island	Y	Y	0
SU0905	Surry	Claremont	Y	Y	2
SU0906	Surry	Savedge	Y	Y	1
SU1001	Surry	Hog Island	Y	Y	2
SU1002	Surry	Surry	Y	Y	3
SU1004	Surry	Surry	Y	Y	1
SU1005	Surry	Claremont	Y	Y	2
SU1006	Surry	Claremont	Y	N	NA

Appendix IV: -continued-

SU1007	Surry	Surry	Y	Y	1
SU1008	Surry	Claremont	Y	Y	1
SU1101	Surry	Hog Island	Y	N	NA
SU1102	Surry	Hog Island	Y	Y	2
SU1104	Surry	Surry	Y	Y	1
SU1105	Surry	Claremont	Y	N	NA

Appendix V: Summary of 2011 Bald Eagle survey results for the Bay fringe of the western shore. See methods section for definition of "occupied territory" and "active nest".

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
GL0201	Gloucester	Saluda	Y	N	NA
GL0403	Gloucester	Gloucester	Y	Y	2
GL0602	Gloucester	Gloucester	Y	Y	1
GL0801	Gloucester	Achilles	Y	Y	2
GL1104	Gloucester	Achilles	Y	Y	2
HM0701	Hampton	Hampton	Y	Y	2
HM0702	Hampton	Hampton	Y	Y	1
HM0901	Hampton	Hampton	Y	Y	2
HM1001	Hampton	Hampton	Y	Y	0
HM1101	Hampton	Hampton	Y	Y	2
KQ0202	King and Queen	Church View	Y	Y	1
KQ0403	King and Queen	Church View	Y	Y	0
KQ1005	King and Queen	Truhart	Y	Y	1
MA0102	Mathews	Mathews	Y	Y	1
MA0901	Mathews	New Pt Comfort	Y	Y	2
MA1001	Mathews	Mathews	Y	Y	2
MA1002	Mathews	Mathews	Y	Y	3
MA9701	Mathews	Ware Neck	Y	Y	2
MI0401	Middlesex	Wilton	Y	N	NA
MI0603	Middlesex	Saluda	Y	Y	0
MI0801	Middlesex	Saluda	Y	Y	1
MI0802	Middlesex	Wilton	Y	Y	2
MI0803	Middlesex	Wilton	Y	Y	2
MI0903	Middlesex	Shacklefords	Y	Y	1
MI0904	Middlesex	Saluda	Y	Y	1
MI8501	Middlesex	Wilton	Y	Y	2
ND0101	Northumberland	Fleets Bay	Y	N	NA
ND0401	Northumberland	Reedville	Y	Y	1
ND0502	Northumberland	Reedville	Y	Y	0
ND0901	Northumberland	Fleets Bay	Y	Y	1
ND1001	Northumberland	Reedville	Y	Y	1
ND1002	Northumberland	Reedville	Y	Y	2
ND1004	Northumberland	Reedville	Y	Y	2
ND1005	Northumberland	Reedville	Y	N	NA
ND1102	Northumberland	Reedville	Y	N	NA
ND9201	Northumberland	Reedville	Y	Y	2
PQ1001	Poquoson City	Poquoson W	Y	Y	2

Appendix VI: Summary of 2011 Bald Eagle survey results for the Eastern Shore. See methods section for definition of "occupied territory" and "active nest".

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
AC0001	Accomack	Chincoteague W	Y	Y	0
AC0002	Accomack	Saxis	Y	Y	0
AC0202	Accomack	Hallwood	Y	Y	2
AC0305	Accomack	Parksley	Y	N	NA
AC0306	Accomack	Chesconessex	Y	N	NA
AC0404	Accomack	Saxis	Y	Y	1
AC0405	Accomack	Parksley	Y	Y	0
AC0501	Accomack	Pungoteague	Y	Y	1
AC0602	Accomack	Exmore	Y	Y	2
AC0603	Accomack	Bloxom	Y	Y	2
AC0604	Accomack	Parksley	Y	Y	0
AC0605	Accomack	Tangier Island	Y	Y	1
AC0701	Accomack	Metomkin Inlet	Y	Y	0
AC0702	Accomack	Chincoteague E	Y	Y	UNKNOWN
AC0705	Accomack	Pungoteague	Y	Y	1
AC0706	Accomack	Pungoteague	Y	Y	1
AC0801	Accomack	Exmore	Y	Y	1
AC0803	Accomack	Saxis	Y	Y	2
AC0805	Accomack	Saxis	Y	Y	2
AC0806	Accomack	Pungoteague	Y	Y	UNKNOWN
AC0807	Accomack	Pungoteague	Y	Y	2
AC0808	Accomack	Jamesville	Y	Y	0
AC0901	Accomack	Accomac	Y	N	NA
AC0903	Accomack	Pungoteague	Y	Y	2
AC0904	Accomack	Jamesville	Y	N	NA
AC0905	Accomack	Hallwood	Y	Y	0
AC0906	Accomack	Boxiron	Y	Y	0
AC1002	Accomack	Wachapreague	Y	Y	2
AC1003	Accomack	Accomac	Y	Y	2
AC1101	Accomack	Bloxom	Y	Y	0
AC1102	Accomack	Chincoteague W.	Y	Y	2
AC1103	Accomack	Chincoteague E.	Y	N	NA
AC1104	Accomack	Saxis	Y	Y	0
AC1105	Accomack	Parksley	Y	N	NA
AC1106	Accomack	Pungoteague	Y	N	NA
AC1107	Accomack	Jamesville	Y	N	NA
AC1108	Accomack	Chincoteague W.	Y	Y	2
AC1109	Accomack	Saxis	Y	Y	2
AC8802	Accomack	Exmore	Y	Y	1

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AC9102	Accomack	Jamesville	Y	N	NA
AC9303	Accomack	Parksley	Y	Y	1
AC9401	Accomack	Chincoteague W	Y	Y	2
AC9703	Accomack	Chincoteague W	Y	Y	2
AC9802	Accomack	Pungoteague	Y	Y	0
AC9902	Accomack	Accomac	Y	N	NA
NT0201	Northampton	Cheriton	Y	Y	2
NT0202	Northampton	Cheriton	Y	Y	1
NT0401	Northampton	Exmore	Y	Y	2
NT0601	Northampton	Cobb Island	Y	Y	1
NT0602	Northampton	Elliotts Creek	Y	Y	2
NT0703	Northampton	Franktown	Y	Y	2
NT0705	Northampton	Franktown	Y	Y	1
NT0801	Northampton	Townsend	Y	Y	UNKNOWN
NT0802	Northampton	Townsend	Y	Y	1
NT0804	Northampton	Cheriton	Y	Y	2
NT0806	Northampton	Franktown	Y	Y	0
NT1001	Northampton	Fisherman Isl	Y	N	NA
NT1002	Northampton	Nassawaddox	Y	Y	0
NT1004	Northampton	Elliotts Creek	Y	Y	1
NT1005	Northampton	Jamesville	Y	Y	1
NT1101	Northampton	Cheriton	Y	Y	2
NT1102	Northampton	Franktown	Y	Y	1
NT9403	Northampton	Townsend	Y	Y	1
NT9701	Northampton	Townsend	Y	Y	2

Appendix VII: Summary of 2011 Bald Eagle survey results for lower Tidewater. See methods section for definition of “occupied territory” and “active nest”.

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
CP0301	Chesapeake	Bowers Hill	Y	Y	2
CP0401	Chesapeake	Deep Creek	Y	Y	3
CP1001	Chesapeake	Fentress	Y	Y	1
CP1101	Chesapeake	Lk Drummond	Y	Y	0
NO1001	Norfolk	Norfolk North	Y	Y	2
NO1101	Norfolk	Little Creek	Y	Y	3
VB0001	Virginia Beach	North Bay	Y	Y	2
VB0601	Virginia Beach	Virginia Beach	Y	Y	2
VB0701	Virginia Beach	Pleasant Ridge	Y	Y	1
VB0702	Virginia Beach	Virginia Beach	Y	Y	2
VB0902	Virginia Beach	Knotts Isl	Y	Y	2
VB0903	Virginia Beach	Creeds	Y	Y	0
VB1001	Virginia Beach	Creeds	Y	N	NA
VB1002	Virginia Beach	Knotts Isl	Y	Y	2
VB1101	Virginia Beach	North Bay	Y	Y	3
VB1102	Virginia Beach	Pleasant Ridge	Y	Y	2
VB1103	Virginia Beach	Pleasant Ridge	Y	Y	1
VB1104	Virginia Beach	Princess Ann	Y	Y	2
VB1105	Virginia Beach	Cape Henry	Y	Y	2
VB9701	Virginia Beach	Kempsville	Y	Y	2

Appendix VIII: Summary of 2011 Bald Eagle survey results for Inland areas. See methods section for definition of “occupied territory” and “active nest”.

Nest Code	County	Topo Quad	Occup Terr	Active Nest	Productivity
AH0101	Amherst	Lynchburg	Y	Y	2
AL1101	Albemarle		Y	Y	1
AL9801	Albemarle	Simeon			NC
AU0801	Augusta				NC
BA0601	Bath	Bath Alum			NC
BA0801	Bath				NC
BA1001	Bath				NC
BA9301	Bath	Mountain Grove			NC
BA9901	Bath	Sunrise			NC
BE0301	Bedford	Lynchburg			NC
BK0701	Buckingham	Scottsville			NC
BK0702	Buckingham	Shipman			NC
BR0901	Brunswick	Smoky Ordinary			NC
CD0302	Chesterfield	Winterpock	Y	Y	2
CD0702	Chesterfield	Hallsboro	Y	N	NA
CL0401	Clarke	Ashby Gap			NC
CL0402	Clarke	Ashby Gap			NC
CL1001	Clarke	Round Hill	Y	Y	2
CT1101			Y	Y	UNKNOWN
CU0401	Culpepper	Stratford Hall			NC
CU9701	Culpepper	Rapidan			NC
DN1001	Dinwiddie	Beach	Y	Y	2
FL1101	Fluvanna		Y	Y	UNKNOWN
FQ1001	Fauquier	Rectortown	Y	Y	1
FQ1002	Fauquier		Y	Y	1
FQ1101	Fauquier		Y	N	NA
FQ9201	Fauquier	Rectortown			NC
GO0701	Goochland	Cartersville			NC
HF0301	Halifax	Omega	Y	N	NA
HF0901	Halifax	Saxe			NC
HF1101	Halifax	Buffalo Springs	Y	N	NA
HI0801	Highland	???	Y	Y	1
HI0802	Highland	???	Y	Y	2
HI1001	Highland	Monterey	Y	Y	1
HN1002	Hanover	Seven Pines			NC
LD0501	Loudoun	Leesburg			NC
LD0901	Loudoun				NC
LD1001	Loudoun	Bluemont			NC
LD1002	Loudoun	Waterford			NC
LD1101	Loudoun	Bluemont	Y	Y	0

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LE1001	Lee				NC
LO0201	Louisa	Mineral			NC
LO0601	Louisa	Lake Anna			NC
LO0602	Louisa	Lake Anna			NC
LO0901	Louisa	Poolesville			NC
ME0201	Mecklenburg	Bracey	Y	Y	2
ME0501	Mecklenburg	Tungsten	Y	Y	2
ME0502	Mecklenburg	John H Kerr	Y	Y	2
ME0801	Mecklenburg	Tungsten	Y	Y	2
ME0802	Mecklenburg	Boydton	Y	Y	2
ME0901	Mecklenburg	Tungsten	Y	Y	1
ME0902	Mecklenburg	Tungsten	Y	Y	2
ME1004	Mecklenburg	Clarksville South	Y	Y	1
ME1101	Mecklenburg	John H Kerr	Y	Y	0
ME1102	Mecklenburg	John H Kerr	Y	N	NA
ME1103	Mecklenburg	Bracey	Y	Y	2
ME1104	Mecklenburg	John H Kerr	Y	Y	2
NE0701	Nelson	Howardsville			NC
NY0801	Nottoway	Danieltown			NC
PA0301	Page	Rileyville			NC
PE1101	Prince Edward	Green Bay	Y	N	NA
PU0701	Pulaski	Radford South			NC
PV0301	Pittsylvania	Straightstone			NC
PW9803	Prince William	Thoroghfare Gap			NC
RH0901	Rockingham	Mt Sidney	Y	Y	2
RH0902	Rockingham		Y	Y	0
SH0201	Shenandoah	Strasburg			NC
SO0101	Southampton	Riverdale	Y	Y	2
SO1101	Southampton	Margarettsville	Y	Y	2
SO1102	Southampton	Courtland	Y	Y	2
SP0701	Spotsylvania				NC
SS0201	Sussex	Waverly	Y	Y	2
SS0801	Sussex		Y	Y	2
SS9701	Sussex	Disputana South	Y	Y	1
TA1001	Tazewell	Garden Mtn			NC
WA1001	Washington	Shady Valley			NC
WR0901	Warren		Y	N	NA