The Raven

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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 once 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. A journal, *Virginia Birds: A Quarterly Journal of Ornithological Sightings in the Commonwealth,* published quarterly and contains records of bird sightings from the different regions of the Commonwealth.
6. 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. As of January 2022, annual dues are $10.00 for students, $20.00 for active members, $35.00 for families, $50.00 for sustaining members, $75.00 for contributing members, and $500.00 for life members.

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Assessment of Body Size and Sexual Size Dimorphism in *Haliaeetus leucocephalus* (Bald Eagles) of the Chesapeake Bay

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Abstract

We measured eight morphometric parameters to characterize body size and sexual size dimorphism in *Haliaeetus leucocephalus* L. (Bald Eagle) from the Chesapeake Bay. Linear measurements, including culmen length, culmen depth, hallux length, tarsus length, wing chord, length of 8th primary, and tail length, were made from museum specimens that were exclusive to the Chesapeake Bay population. We obtained mass data from the National Wildlife Health Center's Bald Eagle necropsy program. Bald Eagles from the Chesapeake Bay showed some level of reversed sexual size dimorphism in all characters examined. Mass and tarsus length exhibited the highest dimorphism index. On average, females were more than 30% heavier than males, with a tarsus that was 17% longer. Body size for Bald Eagles in the Chesapeake Bay is larger than in southern populations and smaller than in northern populations, supporting earlier evidence of clinal variation with latitude.

Introduction

Body size has been correlated with a broad array of life history traits, including, among others, behavioral dominance, metabolism, fecundity, survivorship, home range, and migration distance (e.g., Calder 1974, Calder 1984, Peters 1986, Riess 1989). Due to its integral relationship with many biological processes, body size is an important morphological characteristic and its measure is often required to test many prominent ecological hypotheses. Body size is one of only a few parameters that represent a common currency across a wide range of disparate ecological sub-disciplines, from geographic variation on a continental scale, to limits of species coexistence within ecological communities, to foraging behavior and metabolic requirements.

Haliaeetus leucocephalus L. (Bald Eagle) is the largest avian predator in North America. Variation in body size with latitude has been well known and is the primary basis for earlier subspecies designations between southern and northern populations (American Ornithologists' Union 1957). However, most of the available body size information is focused within populations near the extremes of the breeding range. The breeding population of Bald Eagles within the Chesapeake Bay is believed to be reproductively isolated from other populations along the Atlantic Coast and elsewhere throughout North America and occupies a mid-latitude position within the species range (Byrd et al. 1990). There have been no attempts to characterize body size within this population. Here, we attempt to sample birds specifically from the Chesapeake Bay breeding population for the purpose of quantifying body size and extent of sexual dimorphism. We compare findings to other populations throughout the breeding range.

Methods

The Chesapeake Bay is an area of convergence for Bald Eagle breeding populations along the Atlantic Coast. In addition to a resident breeding population, post-nesting and subadult Bald Eagles from breeding populations in the Southeast and Northeast migrate to the Bay during specific periods of the year. In late spring and early summer, Bald Eagles migrate north from Florida and other southeastern states to spend the summer months in the Bay (Broley 1947, Millsap et al. 2002, Watts and Byrd 1999). Based on band returns and observations within communal roosts, migrant Bald Eagles appear to move into the Bay from southern populations in mid- to late May, spend the summer months, and leave during September (Broley 1947, Clark 1992, Watts and Whalen 1997). Bald Eagles from northeastern

Canada and the United States migrate southward into the Chesapeake Bay during the late fall and early winter period (Byrd et al. 1990, McCollough 1986, Stewart and Robbins 1958). These birds apparently move south in advance of large water bodies freezing over in northern latitudes, and their appearance in the Bay coincides with the movement of waterfowl into the area. Numbers increase through November and December, typically reaching a peak in January. Most northern birds are believed to have moved northward out of the Bay by mid-March.

The convergence of other breeding populations on the Chesapeake Bay makes it difficult to isolate birds from this breeding population for morphometric description. In order to overcome this problem, we screened available material by time of year. We selected periods during the annual cycle when the number of birds from other populations reaches a low. We included materials that were collected or recovered between mid March and late May or mid-September and late November. We selected materials that reflect the core of the Chesapeake Bay breeding population, including Virginia, Maryland, Delaware, southeastern Pennsylvania, and northeastern West Virginia.

We measured eight commonly used morphometric parameters to characterize body size in Bald Eagles from the Chesapeake Bay. Linear measurements were made from preserved specimens from the Natural History Museum of the Smithsonian Institution and from the Bailey-Law collection held at Virginia Polytechnic Institute and State University. Linear characters included culmen length, culmen depth, hallux length, tarsus length, wing chord, length of 8th primary, and tail length. Culmen length was measured as the chord from the distal edge of the cere to the tip of the lower mandible. Culmen depth was measured from the distal edge of the cere to the ventral surface of the lower mandible with the mandibles in the closed position. Hallux length was measured as the distance between the location where the hallux emerges from the skin and its distal end. Tarsus length was measured by palpating the proximal and distal ends of the tarsus bone in order to include the full bone length. All of the bone measurements above were made with dial calipers to the nearest 0.1 mm. In order to improve accuracy, we repeated these measurements 3 times and used an average value to represent the character. Wing chord was measured from the radial-carpal joint to the distal end of the longest primary. The length of the 8th primary was measured as the distance between where the feather inserts on the wing to the distal end. Tail length was measured as the distance between where the feather inserts on the tail and the distal end of the longest retrix. This was accomplished by inserting a metal ruler between the central retrices to the base of the feathers and measuring the longest feather. Some characters could not be measured on all individuals due to specimen condition.

Mass data were obtained from the National Wildlife Health Center's Bald Eagle necropsy program. In order to isolate the Chesapeake Bay breeding population, records were sorted according to the geographic and time-of-year constraints outlined above. In addition, only carcasses that were considered to be in good to excellent condition when weighed were included.

We calculated descriptive statistics and compared average characters for male and female samples using two-tailed t-tests for independent samples. The degree of dimorphism for each character was expressed using the dimorphism index outlined in Storer (1966).

Results

Bald Eagles from the Chesapeake Bay showed some level of sexual dimorphism in all characters examined (Table 1). Females were the larger sex in every respect and size differences were statistically significant for all characters except culmen length. The relative degree of dimorphism varied across parameters, with tarsus length and body mass exhibiting the greatest relative differences between the sexes. On average, females were more than 30% heavier than males, with a tarsus that was 17% longer. Relatively minor but statistically significant differences were found for hallux length and culmen depth. Linear measurements of flight feathers were significantly different between males and females but these characters exhibited considerable variation within gender classes.

Discussion

Clinal variation in body size with latitude has been documented for many vertebrate taxa (e.g., Allee et al. 1949, Mayr 1963). For Bald Eagles, size differences between populations near the extremes of the breeding range have been well known, with northern populations containing significantly larger individuals than southern populations (American Ornithologists' Union 1957). Body size for Bald Eagles in the Chesapeake Bay appears to fall between that reported from populations to the south and north. For example, average wing chord for males (581 mm) and females (621 mm) in the Chesapeake Bay was longer than for southern populations (529 and 577 mm) but shorter than in northern populations (589 and 640 mm; Friedmann 1950). Similarly, tail length for males and females in the Chesapeake Bay was 287 and 316 mm compared to 249 and 271 mm and 310 and 339 mm for southern and northern populations, respectively. These findings are consistent with the positive correlation between body size and latitude that has been documented for many avian species (e.g., Aldrich and James 1991, James 1970). For Bald Eagles, the underlying factors that may have lead to this pattern remain unclear.

Reversed sexual size dimorphism is a common characteristic among predatory birds that has evolved independently in

Table 1. Summary statistics for Chesapeake Bay Bald Eagle morphometric characters. Values presented are means ± 1 SE. Parenthetical values are sample sizes for males and females, respectively. All linear values are presented in mm. Mass is presented in g.

Character	Male	Female	Index[a]	t-statistic	p-value
Culmen length (14, 11)	50.4 ± 1.01	52.3 ± 0.96	1.9	1.33	ns
Culmen depth (14, 10)	33.5 ± 0.52	35.1 ± 0.33	2.3	2.39	<0.05
Hallux length (15, 12)	39.6 ± 0.96	42.3 ± 0.44	3.3	2.34	<0.05
Tarsus length (15, 12)	70.8 ± 1.62	82.8 ± 1.08	7.8	5.76	<0.001
Wing chord (15, 12)	581 ± 8.7	621 ± 7.1	3.3	3.45	<0.01
8th primary length (14, 10)	376 ± 14.1	425 ± 5.3	6.1	2.83	<0.01
Tail length (15, 10)	286 ± 9.1	315 ± 8.1	4.8	2.39	<0.05
Body mass (36, 30)	3522 ± 137.7	4630 ± 105.4	13.6	6.5	<0.001

[a]Dimorphism index (Storer 1966); greater values represent greater dimorphism.

different taxa. Several hypotheses have been advanced to explain this form of dimorphism (see Mueller 1990). Some advantages of large female size include a greater capacity to produce and incubate eggs or care for young (Andersson and Norberg 1981, Lundberg 1986, Wheeler 1983) and a size advantage in competition for mates (Newton 1988, Olsen and Olsen 1987). Small males have been suggested to be more efficient foragers and providers (Andersson and Norberg 1981, Hakkarainen and Korpimaki 1991, Lundberg 1986) and superior in territorial contests and courtship displays (Safina 1984). Another line of explanation suggests that it is not absolute size but the relative asymmetry between sexes that is important. For example, female dominance may help to maintain parental roles and reduce overlap in food niches (Mueller 1986, Mueller and Meyer 1984, Smith 1982).

Bald Eagles in the Chesapeake Bay exhibit considerable size dimorphism that is detectable in nearly all of the characteristics measured here. Body mass was particularly dimorphic, with females weighing 30% more than males on average. Although the factors that have contributed to the formation and maintenance of these differences are not completely clear, several of the hypotheses outlined above could easily apply to eagles within this breeding population. Males and females serve functionally different roles during the nesting period. For example, females are behaviorally dominant and control activities on the nest surface, males provide much of the prey through the early period of brood rearing, and females perform more of the incubation, brooding, and chick provisioning duties (Markham and Watts, unpubl. data). Division of labor during the nesting cycle may have consequences for body size.

The level of dimorphism found in the Chesapeake Bay is generally consistent with birds examined in the northern portion of the breeding range (Bortolotti 1984) but varies somewhat in the details. Females were approximately 25% heavier than males in the northern portion of the range. Hard structures such as culmen and hallux appear to be relatively less divergent within the Chesapeake Bay compared to farther north based on comparison of respective dimorphism indices. However, divergence patterns for feather structures appear to be very similar between the geographic areas. Geographic variation in the relative divergence of different structures may suggest geographic differences in some of the underlying selective pressures. A range-wide evaluation of these characters may help to provide further insight into factors that may contribute to sexual dimorphism.

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Status and Distribution of Colonial Waterbirds in coastal Virginia: 2018 Breeding Season

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Abstract

We surveyed 270 waterbird colonies during the breeding season of 2018. Colonies supported an estimated 43,159 breeding pairs of 23 species. Gulls were the most abundant group with more than 19,700 breeding pairs. Terns and waders accounted for 7,129 and 6,386 pairs respectively. Although they have declined dramatically, Laughing Gulls (*Larus atricilla*) continue to be the most abundant species and were three times more abundant than any other species, accounting for nearly 40% of the total waterbird community. The barrier island/lagoon system of the Eastern Shore was the most important region for the majority of colonial species encountered. In 2018, this region supported 22 of the 23 species evaluated. The Eastern Shore accounted for 50.5% and 46.6% of all breeding pairs and colonies respectively. For 17 of the 23 species, the region supported more than 50% of the known coastal population.

The colonial waterbird community as a whole in coastal Virginia has declined dramatically since 1993 (2018 survey did not include Great Blue Herons [*Ardea herodias*] or all Great Egrets [*Casmerodius albus*]). Population estimates for 15 (68%) of the 22 species assessed declined between 1993 and 2018. Declines varied considerably between species with 14 species declining more than 40% and 9 species declining more than 60%. Cattle Egrets (*Bubulcus ibis*) showed the highest loss rate (-96.7%), declining from an estimated 1,459 to only 48 pairs. Little Blue Herons (*Egretta cerulea*) declined by 83% from 374 to only 64 pairs. Seven species increased between 1993 and 2018. Dramatic expansions were documented for White Ibis (*Eudocimus albus*), Double-crested Cormorant (*Phalacrocorax auritus*), and Brown Pelican (*Pelicanus occidentalis*).

Over the past 25 years, two major forces appear to be shaping the colonial waterbird community in Virginia. These include 1) regional shifts in population centers that are driving population increases in Virginia and 2) habitat degradation related to sea-level rise. With the exception of Great Egrets, all species that have increased over the past 20 years have experienced ongoing range expansions and are riding a population wave that is progressing through Virginia. This includes Great Black-backed Gull (*Larus marinus*), Double-crested Cormorant, Brown Pelican, and White Ibis. Most of the decline in medium-sized waders is being driven by habitat loss related to erosion of islands. This erosion results from sea-level rise, is ongoing and represents a significant threat to these populations. Several ground-nesting seabirds are likely more directly impacted by the loss of viable habitat and demographic impacts related to frequent flooding. The most notable example is the Laughing Gull that has experienced a catastrophic decline in both population and distribution.

Introduction

In Virginia, colonial waterbirds include herons, egrets, ibises, gulls, terns, skimmers, cormorants, and pelicans. These birds share the unusual characteristic of nesting in dense assemblages. The result of this behavior is that they typically breed in very few locations such that the loss of a few breeding areas may have profound consequences on a population level. Due to their position in the aquatic food web, they are considered to be good indicators of ecosystem health (Kushlan 1993, Stolen et al. 2005, Amat and Green 2010). The most significant threats to colonial waterbirds include human disturbance, predation, habitat loss, and contaminants (Parnell et al. 1988, Benoit and Bretagnolle 2002, Watts 2012). Protection of sensitive colonies clearly depends on the availability of timely locational information. Development of strategic management plans to protect these species and breeding areas requires a broader understanding of population distribution and trends.

For the years prior to the mid-1970s, systematic information on the abundance and distribution of colonial waterbirds in Virginia does not exist. Information during this period is available only from a smattering of nesting records (e.g., Murray 1952), accounts of individual colonies (e.g., Abbott 1955), and area bird lists (e.g., Grey 1950). During the 1975 and 1976 breeding seasons, the first systematic survey of wading bird colonies in coastal Virginia was completed in association with a broad-based survey covering the entire Atlantic Coast (Custer and Osborn 1977). During 1977, the first systematic survey of all colonial waterbird species was conducted in association with the "Maine to Virginia" project (Erwin and Korschgen 1979). In the early 1980s an additional survey was conducted in association with a broad status assessment (Spendelow and Patton 1988). All three of these surveys focused primarily on the coastal fringe and did not attempt to cover the entire Coastal Plain. In 1993, a systematic survey was conducted that covered the entire Coastal Plain from the outer coastline to the fall line (Watts and Byrd 1998). This survey was the most comprehensive assessment to date of the colonial waterbird community in coastal Virginia. The effort covered 446 colonies supporting an estimated 94,947 pairs of 24 species. In 1992, prior to the 1993 survey, a decision was made by the community of agencies and organizations concerned with waterbirds to repeat the survey on a regular schedule (initially 10 years but later reduced to 5) to monitor trends. In keeping with this agreement, the survey was repeated in 2003, 2008 and 2013 (Watts and Byrd 2006). This report provides a summary of the 2018 survey, the fifth in the series of benchmarks.

The purpose of this investigation was to generate population estimates for colonial waterbird species nesting in the Coastal Plain of Virginia in 2018 (Great Blue Herons were not included in the 2018 survey due to funding constraints). Information compiled is intended to (1) be integrated into biological databases to be used in the environmental review process, (2) provide information for comparison to past and future surveys for the purpose of assessing long-term population trends, and (3) be used in the formulation of management recommendations.

Methods

Field Surveys – An extensive aerial survey was conducted using fixed-wing aircraft in 2018 that covered the western and eastern shorelines of the Chesapeake Bay, the upper Bay islands and the Delmarva Peninsula seaside. All barrier islands, Bay islands, and marshlands were overflown and searched for waterbird colonies. Great Blue Heron (the most widely distributed colonial species in Virginia) colonies were not surveyed such that flights of the Delmarva mainland, Western Shore tributaries and Southside (Chowan tributaries) were not covered by aerial surveys. The decision not to survey Great Blue Herons had an impact on coverage of Great Egrets since this species is increasingly nesting within Great Blue Heron colonies throughout the Western Shore tributaries and areas south of the James River. Aerial surveys were conducted by systematically flying over areas at an altitude of approximately 100-150 m and searching for evidence of breeding colonies. Once detected, a colony was circled long enough to allow observers to map the colony location and estimate its size. All colonies were given a unique alpha-numeric code and plotted on GPS-enabled laptops loaded with a recent set of aerial photographs. Groups of breeding pairs were considered independent colonies if they were: (1) separated from other groups within a continuous habitat by at least 400 m, (2) separated from other groups by a distinctive barrier, or (3) separated from other groups by a significant habitat discontinuity (e.g., birds in dune grassland adjacent to birds in a patch of deciduous saplings).

Follow-up ground counts were conducted for all locations except extensive colonies (gulls, cormorants, pelicans) within seaside and bay island marshes. These colonies are often in remote locations and are difficult to survey on the ground due to their aerial extent. It is more cost effective and logistically efficient to survey these colonies from the air.

Population Estimates – Colony size estimates were based primarily on counts of active nests, and occasionally on the number of adults present. The number of breeding adults was used when nest counts were impractical or when deemed inappropriate due to colony disturbance. Colony size was based on complete counts whenever possible. However, due to the large size of many colonies, estimates were derived for a large portion of the colonies. All estimates for aerial surveys were performed by the same observer. Many different observers were involved with ground surveys. To reduce observer bias across surveys, data resolution for estimates was reduced by rounding off reported numbers to the nearest value using the following graded scale: nearest 5 for <50, nearest 10 for 50-200, nearest 25 for 200-400, nearest 50 for 400-1,000, nearest 100 for 1,000-2,000, and nearest 200 for >2,000. Complete counts were used when reported without rounding.

Breeding chronology was taken into account when designing the survey. Coastal marshes and islands supporting gulls, terns, and allies were flown between mid-May and mid-June. Ground counts of urban areas were conducted during April, May, June, and July depending on the species involved. Ground counts of barrier islands, Bay islands, and marshlands were conducted during June and July.

Due to the differences in breeding phenology and circumstances, different surveys were used to generate population estimates for different species. Ground surveys were used for all urban colonies and colonies on barrier and bay islands. Ground surveys were also used for colonies on

marshlands with the exception of extensive gull colonies. Gull colonies often cover many hectares making estimation of nest numbers much easier from the air. Aerial photographs were used to estimate several large colonies including the Brown Pelican/cormorant colony on South Marsh, the Brown Pelican colony on Wreck Island and the complex of White Ibis colonies on Wreck Island. Due to the high vegetation on the Hampton Roads Bridge Tunnel Island the colony estimation technique used in 2018 was different than what has been used previously. For Common Terns (*Sterna hirundo*) and Black Skimmers (*Rynchops niger*) repeated surveys of marked birds were conducted and a simple Lincoln-Petersen estimator (Otis et al. 1978) was used to estimate population size. In addition, nestling counts were used to estimate the number of royal and sandwich terns under the assumption of a one-to-one relationship between chicks and pairs. The Laughing Gull colony on Wreck Island was in dense grass and covered several hectares. The perimeter of the colony was mapped, nest density was determined within three subsamples and the mean density was used to project colony size over the entire colony area.

Population estimates are presented as breeding pairs. Breeding pairs were estimated on a colony by colony basis and compiled to generate an overall population estimate. For colonies surveyed using nest counts or estimates, a one-to-one relationship between nests and pairs was assumed. For colonies surveyed using count or estimates of adults, a one-to-one relationship between adults and pairs was assumed. The portion of population estimates that were based on nests is provided to allow the reader to recalculate population estimates based on number of adults if so desired.

Geographic Regions – For the presentation of gross distribution patterns, the Coastal Plain was broken down into five geographic regions (Figure 1). Regions included were: 1) Seaside - Eastern Shore barrier island/lagoon system along seaward margin of the Delmarva Peninsula northward to the Maryland/Virginia boundary line, 2) Bay Islands - Chesapeake Bay Islands of Accomack County, VA and western shoreline of the Delmarva Peninsula to the Maryland/Virginia border, 3) Urban – major urban areas of lower tidewater, including the cities of Virginia Beach, Norfolk, Portsmouth, Chesapeake, Newport News, and Hampton, 4) Western Shore – south shoreline of the Potomac River to the south shoreline of the James River including all areas from the western shore of the Chesapeake Bay west to the fall line, and 5) Southside – lands south of the James River to the Virginia/North Carolina border including all land between the Atlantic Ocean and the fall line (except areas designated as urban). Unlike in the 1993 (Watts and Byrd 1998), 2003 (Watts and Byrd 2006) and 2013 (Watts and Paxton 2014) surveys, the "Southside" region was not surveyed in 2018. Similarly, inland areas of the "Western Shore" region were not surveyed in 2018. These geographic areas support mixed Great Blue Heron and Great Egret colonies that were not the focus of the 2018 survey. For this reason, no population estimate for these species was generated that is comparable to the 1993, 2003 or 2013 estimates.

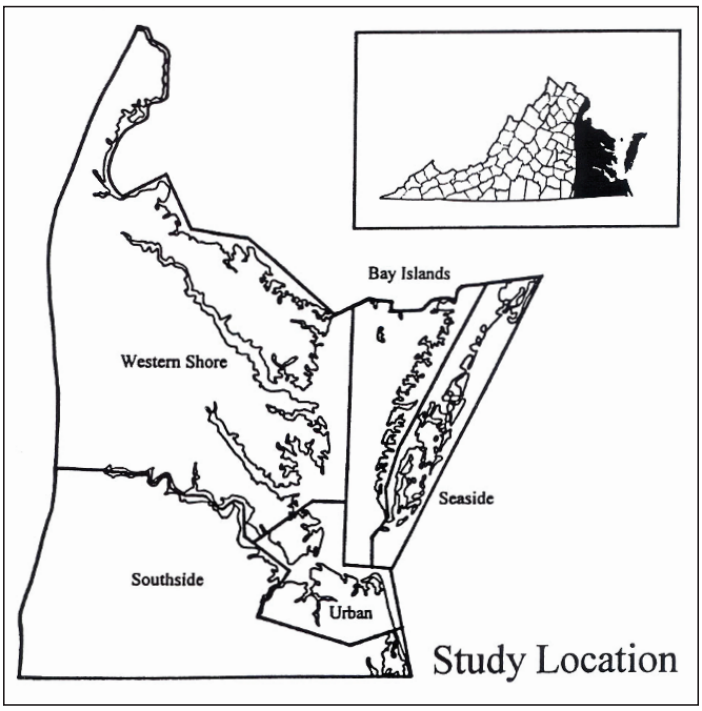

Figure 1. Map of study area. The Coastal Plain of Virginia was subdivided into geographic regions including (1) Seaside, (2) Bay Islands, (3) Urban, (4) Western Shore, and (5) Southside.

Results

Population Estimates – A total of 270 different waterbird colonies were mapped and surveyed during the 2018 breeding season. Colonies contained an estimated 43,159 breeding pairs of 23 species (Appendix I; Great Blue Herons were not included in survey). Colony size varied from 2 to 6,474 pairs with 82.6% of colonies containing fewer than 100 pairs and 93.0% containing fewer than 500 pairs. More than 55% of all colonies larger than 500 pairs were Laughing Gull colonies. The majority (75.6%) of colonies contained only one species and 94.8% contained three species or less. Eight mixed-species rookeries contained five species or more.

Abundance varied widely between species and species groups (Table 1). Gulls were the most abundant group with >19,700 breeding pairs. Terns and waders accounted for 7,129 and 6,386 pairs respectively. Although they have declined dramatically, Laughing Gulls continue to be the most abundant species and were three times more abundant than any other species, accounting for nearly 40% of the total waterbird community. Other than Laughing Gulls, only Double-crested Cormorants and Brown Pelicans exceeded 3,000 breeding pairs. The remaining 20 species accounted for less than 43% of the total breeding pairs.

Table 1. Estimated number of breeding pairs for all geographic regions combined in 2018. 'Colonies' refers to the number of colonies that included each species. The variable '% Nests' is the portion of the population estimate ('Pop. Est.') that was based on counts of nests rather than adults (see Methods). 'NS' indicates 'not surveyed'.

Species	Colonies	Median	Range	% Nests	Pop. Est.
Waders					
White Ibis	3	324	24-1022	0	1746
Glossy Ibis	6	32	1-164	0	366
Great Blue Heron	NS	NS	NS	NS	NS
Great Egret	16	50	1-367	67.9	1527[a]
Snowy Egret	15	21	2-522	7.1	893
Tricolored Heron	11	19	2-141	0	351
Little Blue Heron	4	5	4-36	0	64
Cattle Egret	3	14	1-32	0	48
Green Heron	7	3	1-5	95.2	21
Bl.-crown. Night Heron	12	27	3-249	0	858
Ye.-crown. Night Heron	91	4	2-43	92.2	602
Gulls					
Great Bl.-backed Gull	47	8	1-217	99.7	1119
Herring Gull	28	30	1-357	96.4	1957
Laughing Gull	21	220	3-4200	99.5	16653
Terns					
Gull-billed Tern	7	24	5-158	100	349
Caspian Tern	1	-----	-----	100	1
Royal Tern	3	367	291-2216	100	2874
Sandwich Tern	2	-----	2-100	100	102
Forster's Tern	39	32	9-105	100	1494
Common Tern	19	7	1-605	54.1	1318
Least Tern	46	7	1-258	95.0	991
Others					
Black Skimmer	7	39	2-602	38.4	1567
Dble-crest. Cormorant	6	162	8-4606	100	5012
Brown Pelican	2	-----	1493-1753	100	3246
Total	**270**	**12**	**2-6474**	**84.7**	**43159**[a]

[a]Great Blue Herons and Great Egrets were not surveyed along the tributaries of the Western Shore or throughout the swamps and Chowan watershed of Southside Virginia.

Geographic Distribution – The barrier island/lagoon system of the Eastern Shore was the most important region for the majority of colonial species encountered (Table 2). In 2018, this region supported 22 of the 23 species evaluated. The only species not documented within this geographic area was the Green Heron (*Butorides striatus*). This species does breed within the area but the population is difficult to assess. The Eastern Shore accounted for 58.8% and 46.6% of all breeding pairs and colonies respectively. For 17 of the 23 species, the region supported more than 50% of the known coastal population. Many of these species were found almost exclusively in this region. The number of species supported by the other geographic regions varied widely. The Bay region supported 15 species whereas the urban and western shore supported 14 and 3 species respectively. The Bay region supported 7 species in common with the Eastern Shore that were not found elsewhere. The Bay region was the dominant region for the Double-crested Cormorant and Brown Pelican. Cities included in the urban region supported the dominant populations of Green Herons, Yellow-crowned Night Herons (*Nyctanassa violacea*), Royal Terns (*Sterna maxima*) and Sandwich Terns (*Sterna sandwicensis*).

Population Changes – The colonial waterbird community as a whole in coastal Virginia has declined dramatically since 1993 (Table 3, 2018 survey did not include Great Blue Herons or all Great Egrets). There was no change in either the number or type of species breeding in the area. Population estimates for 15 (68%) of the 22 species assessed declined between 1993 and 2018. Declines varied considerably

Table 2. Summary of species distributions across geographic areas. 'Col' refers to the number of colonies within the respective regions. 'Pairs' indicates the estimated number of breeding pairs within each region. The variable '%' indicates the percentage of the total population found within each region. 'NS' indicates 'not surveyed'.

	Seaside			Bay Islands			Urban			Western Shore			Southside		
Species	**Col**	**Pairs**	**%**	**Col**	**Pairs**	**%**	**Col**	**Pairs**	**%**	**Col**	**Pairs**	**%**	**Col**	**Pairs**	**%**
Waders															
White Ibis	3	1746	100	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Glossy Ibis	4	224	61.2	2	142	38.8	-----	-----	-----	-----	-----	-----	-----	-----	-----
Great Blue Heron	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Great Egret	9	789	51.7	4	127	8.3	3	611	40.0	NS	NS	NS	NS	NS	NS
Snowy Egret	10	704	78.8	4	168	18.8	1	21	2.4	-----	-----	-----	-----	-----	-----
Tricolored Heron	8	301	85.8	3	50	14.2	-----	-----	-----	-----	-----	-----	-----	-----	-----
Little Blue Heron	2	55	85.9	2	9	14.1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cattle Egret	2	33	68.8	1	15	31.2	-----	-----	-----	-----	-----	-----	-----	-----	-----
Green Heron	-----	-----	-----	1	1	4.8	4	13	61.9	2	7	33.3	-----	-----	-----
Bl.-cr. Night Heron	9	758	88.3	3	100	11.7	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ye.-cr. Night Heron	2	28	4.7	4	21	3.5	85	553	91.8	-----	-----	-----	-----	-----	-----
Gulls															
Great Bl.-back. Gull	25	820	73.3	21	289	25.8	1	10	0.9	-----	-----	-----	-----	-----	-----
Herring Gull	14	1560	79.7	13	332	17.0	1	65	3.3	-----	-----	-----	-----	-----	-----
Laughing Gull	20	12716	76.4	-----	-----	-----	1	3937	23.6	-----	-----	-----	-----	-----	-----
Terns															
Gull-billed Tern	6	325	93.1	-----	-----	-----	1	24	6.9	-----	-----	-----	-----	-----	-----
Caspian Tern	1	1	100	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Royal Tern	2	658	22.9	-----	-----	-----	1	2216	77.1	-----	-----	-----	-----	-----	-----
Sandwich Tern	1	2	2.0	-----	-----	-----	1	100	98.0	-----	-----	-----	-----	-----	-----
Forster's Tern	34	1358	90.9	5	136	9.1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Common Tern	15	683	51.9	3	30	2.3	1	605	45.8	-----	-----	-----	-----	-----	-----
Least Tern	33	815	85.5	-----	-----	-----	12	132	13.9	1	6	0.6	-----	-----	-----
Others															
Black Skimmer	6	965	61.6	-----	-----	-----	1	602	38.4	-----	-----	-----	-----	-----	-----
Dbl.-cr. Cormorant	3	47	0.9	1	4606	91.9	1	197	3.9	1	162	3.3	-----	-----	-----
Brown Pelican	1	1493	46.0	1	1753	54.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
Total	**126**	**26119**	**60.5**	**32**	**7779**	**18.0**	**108**	**9086**	**21.1**	**3**	**175**	**0.4**	**NS**	**NS**	**NS**

between species with 14 species declining more than 40% and 9 species declining more than 60%. Cattle Egrets showed the highest loss rate (-96.7%), declining from an estimated 1,459 to only 48 pairs. Little Blue Herons declined by 83% from 374 to only 64 pairs. Seven species increased between 1993 and 2018. Dramatic expansions were documented for White Ibis, Double-crested Cormorant, and Brown Pelican.

Seaside Region – The barrier island/lagoon system along the seaward edge of the Delmarva Peninsula is the most important region for colonial waterbirds in Virginia. Since 1993, colonial waterbirds have been systematically surveyed within this geographic area in 1993, 1998, 2003, 2008, 2013 and 2018. In the majority of species, comparison of population estimates across these years (Table 4) show consistent trends. Snowy Egret (*Egretta thula*), Cattle Egret, Green Heron, Yellow-crowned Night Heron, Glossy Ibis (*Plegadis falcinellus*), Herring Gull (*Larus argentatus*), Laughing Gull, Gull-billed Tern (*Sterna nilotica*), Royal Tern, Forster's Terns (*Sterna forsteri*), Common Tern, and Black Skimmer all showed a consistent decline across the five surveys. Only species that have colonized the area since 1970 including White Ibis, Great Black-backed Gull, Double-crested Cormorant, and Brown Pelican have exhibited consistent increases. Patterns for other species were stable or showed weak trends.

Of particular note within this region was the catastrophic decline in the Laughing Gull population since 1993 and particularly since 2003. The population declined by nearly 70% in only 15 years. Declines were most pronounced within historic strongholds in Northampton County where the decline in both area used for nesting and breeding pairs declined by more than 90%.

Table 3. Comparison of colony numbers and estimated number of breeding pairs for 1993, 2003, 2013 and 2018. Population estimates refer to numbers of breeding pairs.

Species	1993 Pop. Est.	2003 Pop. Est.	2013 Pop. Est.	2018 Pop. Est.
Waders				
White Ibis	3	77	369	1746
Glossy Ibis	1008	818	484	366
Great Blue Heron	9112	9136	7809	NS
Great Egret	2520	2720	2894	1527[a]
Snowy Egret	2329	882	903	893
Tricolored Heron	767	507	718	351
Little Blue Heron	374	310	178	64
Cattle Egret	1459	166	56	48
Green Heron	154	60	49	21
Black-crowned Night Heron	526	640	358	858
Yellow-crowned Night Heron	388	241	299	602
Total Waders	**18640**	**15557**	**14117**	**4949**
Gulls				
Great Black-backed Gull	514	1084	1172	1119
Herring Gull	8801	4521	3326	1957
Laughing Gull	45387	44953	24160	16653
Total Gulls	**54702**	**50558**	**26658**	**19729**
Terns				
Gull-billed Tern	606	322	294	349
Caspian Tern	8	1	9	1
Royal Tern	6250	2858	5321	2874
Sandwich Tern	30	7	28	102
Forster's Tern	2939	2477	2431	1494
Common Tern	6781	1891	1985	1318
Least Tern	1171	843	925	991
Total Terns	**17785**	**8399**	**10993**	**7129**
Others				
Black Skimmer	3098	1828	1506	1567
Double-crested Cormorant	354	1338	2876	5012
Brown Pelican	368	1661	2454	3246
Total Others	**3820**	**4827**	**6836**	**9825**
Grand Total	**94947**	**79343**	**60604**	**43159**[a]

[a]Great Blue Herons and Great Egrets were not surveyed along the tributaries of the Western Shore or throughout the swamps and Chowan watershed of Southside Virginia.

Discussion

During the 2018 breeding season, coastal Virginia supported a substantial community of colonial waterbirds. The size of this community exceeded estimates from the late 1970s (Erwin and Korschgen 1979) but was less than the 1993 and 2003 estimates (Watts and Byrd 1998, 2006). The seaside of the Delmarva Peninsula continues to be the single most important region for colonial waterbirds in coastal Virginia. However, most populations are experiencing declines within this region. There is a clear need to investigate the role of sea-level rise in declines. The Bay region also supported a diverse community of species but much lower numbers of individuals compared to the seaside. Urban areas supported half of all species with residential areas supporting significant populations of Yellow-crowned Night Herons, Great Egrets, and Green Herons. The

Hampton Roads Bridge Tunnel Island supported the most significant seabird colony in the state but has now been lost due to bridge expansion.

Collectively, wader species (excluding Great Blue Heron and Great Egret that were not fully assessed in 2018) declined 30% between 1993 and 2018 from an estimated 7,008 pairs to 4,949 pairs. This decline is in spite of the exponential increase in White Ibis over the past ten years. Most of this overall decline was due to the continued degradation of mixed heronries both on the seaside and Bay islands. These declines have been ongoing and represent a loss of some historic colonies during the past two decades. Other sites may be lost in the next decade. Particularly notable was the continued declines in Cattle Egrets, Little Blue Herons, Tricolored Herons (*Egretta tricolor*), Snowy Egrets and Glossy Ibis. In contrast, White Ibis has exploded on the seaside from 3 pairs in 1993 to 1746 in 2018.

Table 4. Population estimates for colonial waterbirds within the barrier island/lagoon system of the Delmarva Peninsula. Values represent estimated number of breeding pairs.

Species	1993[a]	1998[b]	2003[c]	2008[d]	2013[e]	2018
Waders						
White Ibis	3	18	77	119	369	1746
Glossy Ibis	779	822	669	521	384	224
Great Blue Heron	8	10	0	0	52	NS
Great Egret	885	976	467	642	692	789
Snowy Egret	1862	1212	624	575	755	704
Tricolored Heron	713	530	456	270	688	301
Little Blue Heron	330	195	249	137	150	55
Cattle Egret	854	540	146	95	48	33
Green Heron	47	3	0	0	0	0
Black-crowned Night Heron	442	359	590	539	277	758
Yellow-crowned Night Heron	63	36	2	0	2	28
Gulls						
Great Black-backed Gull	362	369	720	1206	868	820
Herring Gull	6106	4653	3417	2182	2945	1560
Laughing Gull	44387	43784	41692	33152	21414	12716
Terns						
Gull-billed Tern	604	478	304	295	255	325
Caspian Tern	7	4	1	0	9	1
Royal Tern	3250	3451	2058	2259	62	658
Sandwhich Tern	30	54	7	100	5	2
Forster's Tern	2169	2426	1521	1527	1137	1358
Common Tern	3247	1727	843	475	694	683
Least Tern	747	709	703	669	533	815
Others						
Black Skimmer	2549	1766	1679	1151	1135	965
Double-crested Cormorant	0	6	10	65	67	47
Brown Pelican	324	470	454	728	597	1493
Total	**69968**	**64608**	**56689**	**46707**	**33138**	**26119**

[a]from Watts and Byrd 1998
[b]from Truitt and Schwab 2001
[c]from Watts and Byrd 2006
[d]from Watts and Paxton 2009
[e]from Watts and Paxton 2014

White Ibis – Nesting of the White Ibis was first confirmed in Virginia in 1977 on Fisherman Island (Frohring and Beck 1978). Breeding was restricted to the barrier islands until 2013. Breeding areas have been surveyed each year since 1975 (Williams et al. 1990). Until recent years, birds were associated with a mixed-species heronry on Fisherman Island exclusively with no indication of further expansion (Williams et al. 1992). This heronry was abandoned in 2002 and has not been used since that time. In 2000, this pattern changed when birds appeared in the Cobb-Island heronry (Williams et al., unpublished data). This event was followed in 2001 when the Wreck-Island heronry was colonized. In recent years, the White Ibis has colonized the heronry on Chimney Pole Marsh and then the colony on Wire Narrows. The population has grown from 3 pairs in 1993 to 369 pairs in 2013 to 1,746 pairs in 2018. Recent increases have clearly been driven by immigration. Further expansion is likely and colonization should be expected in other large heronries along the seaside and possibly within the upper Bay islands.

Glossy Ibis – The Glossy Ibis was first found breeding in Virginia on Hog Island in 1956 (Bock and Terborgh 1957). The breeding population increased dramatically throughout the 1960s reaching a high by the mid-1970s (Custer and Osborn 1977). Since this time the species has steadily declined on the barrier islands (Williams et al. 1990). By 1993, the coastal plain population had been reduced by more than 50% from historic highs (Watts and Byrd 1998). Between 1993 and 2018, the population has declined by 64%. Of particular importance moving forward is the ongoing erosion of sites supporting mixed heronries on the Bay islands. Losses in this region have accounted for most of the decline.

Great Blue Heron – Due to funding constraints, this species was not assessed throughout the Coastal Plain in 2018. Anecdotal observations while flying other surveys throughout the region suggest that colonies have continued to fragment and the species is becoming more widespread with more small colonies compared to the historic pattern of few large colonies (Watts, personal observation).

Great Egret - Due to funding constraints, this species was not assessed throughout the Coastal Plain. The population has increased dramatically over the past 30 years and this trend appears to be continuing to present although trends vary between regions. Great Egrets have continued to move inland and now breed beyond the fall line into the Piedmont (Watts, per. obs.). Between 2013 and 2018, the population has declined within the seaside of the Delmarva and in urban areas. The population appears to have continued to increase along tributaries of the Western Shore and Southside.

Snowy Egret – Historically, Snowy Egrets bred as far north as New England. However, by the turn of the century, demand from the millinery trade had resulted in a contraction of the breeding range down to North Carolina (Ogden 1978). The first evidence of recolonization was in 1941 when birds were discovered breeding on the seaside of the Delmarva (Murray 1952). By the mid-1950s, this species was documented in all geographic areas of coastal Virginia except the Southside region (e.g., Grey 1950, Abbott 1955). However, since the 1970s breeding has been restricted to the seaside of the Delmarva and the offshore islands of the upper Bay. Numbers have declined steadily on the barrier islands since the mid-1970s. The coastal plain-wide survey in 1993 was comparable to the surveys of the mid-1970s (Custer and Osborn 1977, Watts and Byrd 1998). Between 1993 and 2018 the population has declined by more than 60%. However, the population was relatively stable between 2003 and 2018. Loss of nesting substrate on the seaside and on bay islands continues to be a concern. The colony on Mumford Island in the York River was lost since the 2013 survey due to sea-level rise. Population strongholds continue to be Watts Island and the Chincoteague Causeway.

Tricolored Heron – The Tricolored Heron was first documented to nest in Virginia when breeding birds were discovered on the seaside of the Delmarva in 1941 (Murray 1952). Colonization of Virginia was part of a broader, northward range expansion that occurred between the 1940s and 1970s (Ogden 1978). In Virginia, the population apparently increased to a high that reached a plateau during the 1950s through the 1970s (Erwin and Korschgen 1979). The species has declined on the barrier islands since that time (Williams et al. 1990). The population estimate of 1993 (Watts and Byrd 1998) was more than 50% reduced from that of the mid-1970s (Custer and Osborn 1977). Following an increase between 2003 and 2013 the population has declined and in 2018 was only 46% of the 1993 estimate. Like the other mid-sized waders, this species is vulnerable to ongoing habitat changes.

Little Blue Heron – Little Blue Herons were one of the most abundant waders along the Atlantic Coast from the 1930s to the 1950s (Ogden 1978). Historic breeding records for this species exist for all of the geographic regions of coastal Virginia (Grey 1950, Murray 1952, Abbott 1955). The species declined dramatically from the 1950s to the 1970s (Erwin and Korschgen 1979) and is now found only on the seaside of the Delmarva Peninsula and within 2 colonies on Chesapeake Bay islands. From 1993 to 2018, Little Blue Herons declined by an estimated 82.9% or an additional 63.3% since 2013. Nearly 65% of the population in 2018 was nesting on Wreck Island and the Chincoteague Causeway.

Cattle Egret – The Cattle Egret was first found breeding in Virginia in 1961 (Scott and Cutler 1961). Colonization of Virginia was part of a rapid, broad-front range expansion that followed first establishment in North America in 1953 (Crosby 1972, Telfair 1994). The Virginia population increased rapidly during the 1960s. Although there has

been considerable year to year variation on the barrier islands, numbers have declined since the mid-1970s and precipitously since the mid-1990s. Cattle Egrets experienced a dramatic decline between 1993 and 2018 within all breeding areas. Only 15 pairs were detected on islands within the Chesapeake Bay. Birds disappeared from the Hopewell colony on the James River in the mid-1990s and have never returned. Birds are now restricted to just 2 locations including Watts Island and the Chincoteague Causeway.

Green Heron – Green Herons nest widely throughout the Coastal Plain. Due to their broad distribution and cryptic coloration, none of the colonial waterbird surveys have adequately covered this species. Population estimates are inadequate to assess trends outside of the heronries that are surveyed regularly. Within the heronries that are surveyed regularly, Green Herons have declined dramatically within both the barrier island/lagoon system and the Chesapeake Bay islands. More moderate declines were documented in the traditional colonies within urban areas.

Black-crowned Night Heron – The breeding population of Black-crowned Night Herons (*Nycticorax nycticorax*) in coastal Virginia declined by an estimated 80% between 1975 (Custer and Osborn 1977) and 1993 (Watts and Byrd 1998). However, the species increased throughout the broader Coastal Plain between 1993 and 2003 and this trend continued through the 2008 survey. Much of this increase may be attributed to expansion of numbers within the Watts Island and Tangier Island colonies since 2003. Between 2003 and 2013, Black-crowned Night Herons declined 44% resulting in a 32% decline since 1993. However, this species had a good showing in 2018 with the highest number of pairs since before 1993. The increase is entirely due to gains in seaside colonies with current strongholds including Wreck Island, Cobb Island and the Chincoteague Causeway.

Yellow-crowned Night Heron – The Yellow-crowned Night Heron likely bred in Virginia in the 1800s but was apparently absent by the early 1900s. The first modern breeding record for Virginia was in 1947 (Darden 1947). This event corresponds with a range expansion from the southeast northward to New England (Watts 1995). In Virginia, Yellow-crowned Night Herons increased within urban areas of Norfolk, Hampton, Virginia Beach, and Portsmouth at least through the early 1990s (Watts, unpublished data). Between 1993 and 2003 the population declined primarily because of losses within Bay Island and seaside mixed heronries. Since this time the population has recovered and is higher than in 1993. The increase reflects ongoing population expansion within urban neighborhoods of lower Tidewater.

As a group, gulls declined by nearly 64% over the 25-year period from an estimated 54,702 breeding pairs in 1993 to 19,729 in 2018. This decline was due almost entirely to the catastrophic decline in Laughing Gulls between 2003 and 2018. Herring Gulls continue their long decline. Great Black-backed Gulls increased dramatically between 1993 and 2003 but have stabilized since that time.

Great Black-backed Gull – In 1970, the Great Black-backed Gull was found breeding on Fisherman Island (Scott and Cutler 1970). This event was part of a broader range expansion that began in the early 1900s and has moved down the Atlantic Coast (Good 1998). Since the 1970s, this species has rapidly colonized other locations on both the seaside and Chesapeake Bay islands. Between 1993 and 2003, the population more than doubled in size. Since 2003 the population has remained stable. Although the stronghold continues to be within the seaside, nearly as many colonies occur on the Bay islands and account for more than 25% of the population. The Hampton Roads Tunnel Island continues to be the only breeding location within the lower Bay. The colony located in 2008 on a small islet along the Guinea Marshes in Gloucester County has been lost to erosion.

Herring Gull – A single Herring Gull nest was found on the seaside near Cobb Island in 1948 (Murray 1952). By 1977, 9 colonies containing more than 2,900 pairs were reported (Erwin and Korschgen 1979). The 1993 survey located 35 colonies supporting an estimated 8,800 pairs. The breeding population on the barrier islands apparently reached a high in the late 1980s and has shown evidence of a decline since that time (Williams et al., unpublished data). Between 1993 and 2018 the Coastal Plain population declined by an estimated 77.8% or an additional 41% since 2003. Consistent declines were observed in both regions where breeding was documented in 1993. Most of the larger colonies continue to be on the seaside including the Chincoteague Causeway colony, Coards Marsh and Little Cobb.

Laughing Gull – Virginia has apparently been a stronghold for breeding Laughing Gulls for centuries. This species has been the numerically dominant colonial waterbird during all comprehensive surveys conducted of the Coastal Plain. Between 1977 and 1993 there was a considerable increase in population estimates. Between 1993 and 1998, there was a very small decline in numbers on the seaside of the Delmarva Peninsula (Truitt and Schwab 2001). The barrier island population exhibited considerable variation after the mid-1970s but estimates over the past 20 years have consistently represented only 20-30% of those during the late 1980s. The population decline between 2003 and 2013 was catastrophic and the most significant result of the 2013 survey. Historic colony sites within the southern portion of the Delmarva seaside have now been abandoned for several years. Evidence of stress is now being seen within the topographically higher colonies in Accomack County along the Chincoteague Causeway. Collectively, the patterns of decline suggest impacts by tidal flooding

that require further investigation. The colonies now along the Chincoteague Causeway, on Wreck Island and on the Hampton Roads Tunnel Island appear to be movements of colonies to higher ground.

As a group, terns declined 53% over the 25-year period from an estimated 17,785 pairs in 1993 to 8,361 breeding pairs in 2018. With the exception of Sandwich Terns, all remaining tern species experienced declines ranging from 15 to more than 80%.

Gull-billed Tern – The Gull-billed Tern has experienced extreme population swings in coastal Virginia over the past 200 years (Parnell et al. 1995). In the mid-1800s this species was considered to be abundant along the barrier islands. By the late 1800s and early 1900s they had been reduced to very low numbers by hunters supplying the millinery trade (Bailey 1913). Throughout the early 1900s numbers remained very low (Austin 1932). By the mid-1970s numbers appear to have recovered to those comparable with the 1800s. By 1993, the population had declined once again to approximately 20% of 1970s levels (Watts and Byrd 1998). Between 1993 and 2018 the number of occupied colonies declined from 30 to 7 and the number of breeding pairs declined by 42.4%. A bright spot of the 2018 survey was the substantial increase in Gull-billed Terns from 294 pairs in 2013 to 349 pairs in 2018. This recovery is due to strong colonies on north Smith Island and Cedar Sandbar that collectively accounted for more than 72% of the population.

Caspian Tern – There is some evidence that Caspian Terns (*Sterna caspia*) once bred in greater numbers along the Virginia barrier islands than they have from 1900 to present (reviewed by Weske et al. 1977). Egg collecting and hunting apparently reduced their numbers in the 1880s to a low from which they have never fully recovered. Since 1900, Caspian Terns have been documented in very low numbers breeding in scattered locations along the seaside and occasionally on Chesapeake Bay islands. They appear to be present consistently since the mid-1970s. In 1993 only 7 pairs were documented in 5 locations. During the 2003 survey, only a single pair was documented. In 2008, 2 pairs were documented on Clump Island in the upper Bay. In 2018, a single pair was found within the Royal Tern colony on Wire Narrows. The species has nested on this shell pile consistently since at least 1993.

Royal Tern – In Virginia, Royal Terns have apparently always been the most abundant of the large terns. Like many of the other terns, their numbers have fluctuated widely through the years due to natural and human perturbations. This species also appears to move over a larger spatial scale such that local population patterns may reflect movements rather than population changes. This possibility is supported by wide fluctuations in adjacent states (D. Brinker and S. Cameron, unpublished data). Royal Terns have declined on the barrier islands since the early 1980s (Williams et al., unpublished data). The population estimate for the broader Coastal Plain in 1993 was comparable to estimates from the mid-1970s (Erwin and Korschgen 1979). Since 1993, the number of breeding pairs has declined 34.3%. Since 2003, numbers increased due entirely to the establishment of birds on the Hampton Roads Bridge Tunnel Island. Numbers have again declined and the Hampton Roads Bridge Tunnel Island colony accounts for 84% of the state population. Given the plans for this colony site and the loss of historic breeding sites to sea-level rise, we are likely to observe a population decline in the coming years.

Sandwich Tern – Virginia and occasionally Maryland represent the northern range limit for breeding Sandwich Terns. There is no evidence that this species was ever a common breeder in Virginia. Scattered records in the late 1800s and early 1900s imply that this species was an uncommon nester associated with Royal Tern colonies on the barrier islands (records reviewed by Weske et al. 1977). There is a paucity of reports throughout the middle 1900s until the late 1960s when the species was discovered nesting again on the barrier islands (Buckley and Buckley 1968). Breeding has been consistent on the barrier islands since the mid-1970s but has involved relatively few individuals. Numbers documented during the annual barrier island survey have fluctuated widely since the mid-1970s (Williams et al., unpublished data). The change from 30 pairs in 1993 to 7 pairs in 2003 to 100 pairs in 2008 to 28 pairs in 2013 and back to 102 pairs in 2018 reflect the dynamics of their occurrence in Virginia.

Forster's Tern – Like many of the other colonial species that nested historically in coastal Virginia, Forster's Terns were greatly impacted by market hunting from the 1870s though approximately 1910 (Howell 1911, Austin 1932). Due to their nesting habits, the status of Forster's Terns was less known compared to other tern species. Forster's Terns nest in scattered colonies within the lagoon system on wrack deposited in the marshes or on other topographic highs. Their distributions are subject to change depending on the availability of nesting substrate. This makes them difficult to survey effectively. The first comprehensive survey of Forster's Terns was in 1977 (Erwin and Korschgen 1977). By 1993, numbers appeared to have doubled (Watts and Byrd 1998) likely representing more complete coverage. Between 1993 and 2018 estimated population size declined by 49.2%. More significant is that most (38.5%) of this decline has occurred since 2013. Forster's Terns appear to be suffering from sea-level rise similar to Laughing Gulls that utilize a comparable nesting substrate.

Common Tern - Historically, the Common Tern nested throughout coastal Virginia wherever there was suitable substrate away from predators. Like many of the other species, Common Terns were hunted to very low numbers

by the turn of the 20th century but there were signs of recovery by the early 1930s (Austin 1932). Since the 1960s Common Tern colonies have been documented in many areas of the Coastal Plain. However, over the past 20 years colonies have disappeared from the western shore and lower tidewater. Since the 1980s, Common Terns have shown consistent declines on the barrier islands (Williams et al., unpublished data). However declines on the islands were compensated for by the formation of the largest colony in the state on the Hampton Roads Tunnel Island such that estimates from 1977 (Erwin and Korschgen 1979) and 1993 (Watts and Byrd 1998) were comparable. Between 1993 and 2018, Common Terns declined by 80.6% in coastal Virginia. Considerable declines have been documented in all 3 geographic regions that supported colonies in 1993. Much of the overall decline was accounted for by the recent losses within the tunnel island colony. Given the plans for this colony site and the loss of historic breeding sites to sea-level rise, we are likely to observe continued population declines in the coming years.

Least Tern – Historically, Least Tern *(Sterna antillarum)* colonies have been documented throughout many areas of coastal Virginia including up major tributaries to near tidal fresh waters. Abundant on the barrier islands this species was hunted relentlessly during the late 1800s to near extirpation. After release from hunting pressures, Least Terns rebounded rapidly. Numbers appear to have reached a high in the early 1980s and then declined steadily over the next 20 years (Beck et al. 1990). Between 1993 and 2003 the population declined 28% from 1171 to 843 breeding pairs. Since 2003 the population has recovered to 991 breeding pairs. In 2008, for the first time in Virginia, colonies were located on roof tops in urban areas. Colonies have been located on Lynnhaven Mall, Patrick Henry Mall, and a building on Langley Airforce Base (Lynnhaven Mall site was not documented as active in 2018). The formation of roof top colonies has been reported throughout the southeast and has been anticipated for many years in Virginia. It is possible that additional colonies exist within lower tidewater or elsewhere that have not been discovered. Such colonies are subject to severe heat stress and active management is required to improve productivity.

As a group, the three remaining waterbird species have increased 257% from 3,820 to 9,825 breeding pairs. This overall increase reflects the fact that both Double-crested Cormorants and Brown Pelicans are recent colonizers that are rapidly expanding. This increase masks the substantial decline in Black Skimmers.

Black Skimmer – The Black Skimmer appears to have been a common nester on the barrier islands for as far back as records are available. Due to their coloration, skimmers were not valued in the millinery trade and so were not hunted as actively as many of the other beach-nesting species. They also were favored by the locals and so did not experience the same degree of pressure from egg collectors. From most accounts, Black Skimmers were one of the numerically dominant species on the barrier islands throughout most of the 20th century. However, between the mid-1970s and the 1990s numbers on the barrier islands were reduced by 70%. This decline continued between 1993 and 2013 as the coastal population declined 51.4% from an estimated 3,098 to 1,506 breeding pairs likely due to loss of suitable beach habitat and an increase in mammalian predators. Since 2013 the population appears to have stabilized with strong colonies on the north end of Smith Island and on Cedar Sandbar. The other stronghold on the Hampton Roads Tunnel Island is now at risk of being lost due to plans for expansion of the bridge.

Double-crested Cormorant – Breeding of the Double-crested Cormorant in Virginia was first confirmed in 1978 on a small vegetated island in the James River near Hopewell (Scott 1978). Range wide cormorants have experienced wide fluctuations in numbers and distribution throughout the 20th century (Hatch 1984). Colonization of Virginia represents an expansion beyond the historic range following a low during the DDT era (1940s-1972) (Hatch and Weseloh 1999). After 1984, the Virginia population expanded rapidly to 5 colonies by 1995 containing more than 400 pairs (Watts and Bradshaw 1996). The seaside of the Delmarva was not colonized until 1995. Between 1993 and 2018 the population has increased by 1416% from 354 to 5,012 pairs. Most of this increase is accounted for by the rapid expansion of the Shanks Island colony. The colony has expanded from 6 pairs in 1993 to 907 pairs in 2003 to 1,636 in 2008 to 2,369 in 2013 to 5,012 in 2018. Three colonies now exist on the seaside including 2 on duck blinds in Chincoteague Bay. It seems likely that this species will expand on the seaside as the breeding of brown pelicans expands.

Brown Pelican – The Brown Pelican was first found breeding in Virginia on Fisherman Island in 1987 (Williams 1989). During this same year, birds were also found nesting on Metompkin Island (Williams 1989). In 1992, an additional colony was formed in the upper Chesapeake Bay on Shanks Island north of Tangier (Brinker, personal communication.). In recent years, two colonies on the seaside have come and gone and the current colony on Wreck Island has expanded substantially. Between 1993 and 2018 the Virginia population increased 882% from an estimated 368 to 3,246 breeding pairs. Colonization of Virginia represents a northward range expansion from North Carolina that extends beyond the historic range and follows recovery of southeastern populations from contaminants. Since its discovery, the Shanks Island colony has grown exponentially apparently fueled by continued immigration. In 1993, there were only 53 pairs documented in this colony (Watts and Byrd 1998). By 1999, the colony supported 913 breeding pairs (Watts 1999). The colony reached a peak in 2013 with 1,857 pairs and has

now declined to 1,753 pairs. The Wreck Island colony has shifted south on the island over the past couple of years, expanding dramatically and now including 1,493 pairs.

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APPENDIX I: List of colonial waterbird species surveyed in coastal Virginia, including American Ornithological Society alpha codes.

Species	Scientific Name	Alpha Code
Great Black-backed Gull	*Larus marinus*	GBBG
Herring Gull	*Larus argentatus*	HERG
Laughing Gull	*Larus atricilla*	LAGU
Gull-billed Tern	*Sterna nilotica*	GBTE
Caspian Tern	*Sterna caspia*	CATE
Royal Tern	*Sterna maxima*	ROYT
Sandwich Tern	*Sterna sandwicensis*	SATE
Forster's Tern	*Sterna forsteri*	FOTE
Common Tern	*Sterna hirundo*	COTE
Least Tern	*Sterna antillarum*	LETE
Black Skimmer	*Rynchops niger*	BLSK
Double-crested Cormorant	*Phalacrocorax auritus*	DCCO
Brown Pelican	*Pelacanus occidentalis*	BRPE
White Ibis	*Eudocimus albus*	WHIB
Glossy Ibis	*Plegadis falcinellus*	GLIB
Great Blue Heron	*Ardea herodias*	GBHE
Great Egret	*Casmerodius albus*	GREG
Snowy Egret	*Egretta thula*	SNEG
Tricolored Heron	*Egretta tricolor*	TRHE
Little Blue Heron	*Egretta cerulea*	LBHE
Cattle Egret	*Bubulcus ibis*	CAEG
Green Heron	*Butorides striatus*	GRHE
Black-crowned Night Heron	*Nycticorax nycticorax*	BCNH
Yellow-crowned Night Heron	*Nyctanassa violacea*	YCNH

2022 Annual Report of the Virginia Avian Records Committee

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The members of the 2022 Virginia Avian Records Committee (VARCOM) were Matthew H. Anthony (Chair), Chris Monahan (Secretary), Todd M. Day (Vice Chair), Baxter Beamer, Rob Bielawski, Larry Cartwright, Paul Glass, Nick Newberry, and Ellison Orcutt.

This report covers the activities of VARCOM during the calendar year 2022. During this time, VARCOM convened for an annual meeting on March 19, 2022 in Richmond. The committee also welcomed two new voting members, Baxter Beamer and Ellison, who replaced outgoing voting members John Rowlett and Matt Anthony. Mike Stinson also concluded his long tenure as VARCOM Chair, with Matt Anthony taking over as the newly-elected Chair beginning on January 1, 2022.

One of the most pressing tasks facing VARCOM in 2022 was catching up with a significant backlog of review resulting from disruption of normal committee operations due to an extended vacancy of the Secretary position. Thanks in no small part to the diligent efforts of current Secretary Chris Monahan, who was elected to the position in July 2021, VARCOM successfully managed to review all accumulated records in the Database for Ornithological Verification and Submission (DOVES) during the 2022 calendar year. This was a major accomplishment that required a great deal of time and effort from both the Secretary and Voting Members, all of whom should be commended for their unwavering commitment to restoring VARCOM to its regular schedule of operations. Clearing this backlog was also a boon for Virginia's ornithological records, not least because it formally added four species to the Official State List and corrected a longstanding discrepancy between VARCOM's official list and the actual occurrences in the state.

VARCOM's return to in-person annual meetings was likewise a victory for the committee and a welcome dose of normalcy after the vagaries of the COVID-19 pandemic; the 2022 annual meeting was the first since 2019. At the annual meeting, Todd Day agreed to serve as Vice-Chair, rounding out VARCOM's leadership for the upcoming year. Discussions at the meeting were wide-ranging and touched a number of issues, large and small, with implications for both VARCOM procedure and larger philosophical questions underpinning the committee's activities.

Among the procedural items, the committee addressed imprecision in the voting procedures with regards to taxonomic level of records. It was agreed that the committee reserves the right to accept a submission at a more general taxonomic level than was submitted; language clarifying the procedures for this was approved to be added to the by-laws. This change was subsequently approved by the VSO Board. Substantial changes were also made to the Review List, removing or narrowing the reviewable areas for many species which had met the threshold for no longer being reviewable. The Review List as published on VARCOM's website has been updated to reflect these changes.

Discussion also touched on questions about expedited review and whether it continues to be a useful tool for VARCOM. While the committee acknowledged that some uncertainties remain about the continuing value of expedited review, it was decided to retain it for the near-future. Finally, the committee revisited prior discussions about deficiencies

with the DOVES database. All members agree that DOVES has substantial limitations that need to be addressed, and all agree that VARCOM lacks the internal expertise necessary to address these issues. Work is being done to enlist the appropriate outside help needed to fix DOVES, but this is an ongoing project which was not completed in 2022 and likely will take several years to finish.

During the 2022 calendar, VARCOM reviewed and accepted records of four species that were new additions to the Official List. What follows is a summary of records that were reviewed by VARCOM in 2022. During this period VARCOM reviewed 159 submissions; 155 of these were accepted and 4 were not accepted. Of those that were accepted, 129 were reviewed through the eBird expedited review process, while 26 were evaluated by the full committee under the traditional review process. The following summary lists expedited review records separately. Accepted records were assigned to one of six categories of acceptance as defined in VARCOM's by-laws, which can be found on the VARCOM section of the VSO website: https://www.virginiabirds.org/varcom-bylaws.

Where possible, attempts have been made to contextualize records relative to previous state and/or regional records. It should be noted that, in general, this context is based on records that have been reviewed previously by VARCOM. The committee recognizes that in some instances there may be other valid records that have not yet been reviewed, and welcomes submission of such records for formal review by VARCOM.

Abbreviations: ph. – photographed; † – written documentation submitted; a.r. – audio recording; v.r. – video recording; vis. – visual observation; * – specimen collected; CBC – Christmas Bird Count; eBird – accepted by expedited review; ML XXXXXX – Macaulay Library identification number.

Records accepted by traditional review

Black-bellied Whistling-Duck (*Dendrocygna autumnalis*): one record of two individuals as follows:

Two individuals, Willow Lake, Rockbridge, [ph. Richard Rowe] 31 May 2021; accepted Category 1.

Green-winged Teal (Eurasian) (*Anas crecca crecca*): two records possibly pertaining to a single returning individual as follows:

One individual, Middlesex Drive Pond, Loudoun, [vis. Adit Nehra, ph. Patrick Lewis] 23 Jan 2021; accepted Category 1.

One individual, Middlesex Drive Pond, Loudoun, [ph. Patrick Lewis] 6 Nov 2021; accepted Category 1.

White-winged Dove (*Zenaida asiatica*): one record of a single individual as follows:

One individual, Southwest Virginia Wildlife Center of Roanoke, Roanoke, [ph. Samantha Cline and Haley Olsen-Hodges] 10 Jan 2022; accepted Category 1.

Buff-bellied Hummingbird (*Amazilia yucatanensis*): one record of a single individual as follows:

One individual, private residences, Norfolk, [vis. And ph. Barbara Innes and Margaret Gomez, submitted Matthew Anthony] 2 Dec 2020; accepted Category 1. First state record.

Northern Lapwing (*Vanellus vanellus*): one record of a single individual as follows:

One individual, Munden Rd. and Morris Neck Rd., Virginia Beach, [ph. Bill Oyler] 8 Jan 2022; accepted Category 1. Second state record.

Whimbrel (*Numenius phaeopus*): one record of 126 individuals as follows:

126 individuals, (37.642865, -77.830353), Goochland, [ph. Allen Bryan] 21 May 2016; accepted Category 1.

Bar-tailed Godwit (Siberian) (*Limosa lapponica*): one record of one individual as follows:

One individual, Chincoteague NWR, Accomack, [ph. Alex Henry] 30 Aug 2019; accepted Category 1. First state record of Siberian taxon.

Buff-breasted Sandpiper (*Calidris subruficollis*): one record of one individual as follows:

One individual, Patton Farm Rd., Augusta, [ph. Victor Laubach] 1 Sep 2021; accepted Category 1.

Wilson's Phalarope (*Phalaropus tricolor*): three records totaling three individuals as follows:

One individual, Rockfish Rd., Augusta, [ph. Victor Laubach, Huck Hutchens, and Shannon Updike] 28 Aug 2021; accepted Category 1.

One individual, Swoope Rd. and Hewitt Rd., Augusta, [ph. Victor Laubach] 2 Sep 2021; accepted Category 1.

One individual, Broadway Wastewater Treatment Plant, Rockingham, [ph. Barbara Andes and Greg Moyers] 6 Aug 2022; accepted Category 1.

Red-necked Phalarope (*Phalaropus lobatus*): three records totaling five individuals as follows:

Two individuals, Hog Island WMA, Surry, [ph. Noah Li] 21 May 2021; accepted Category 1.

Two individuals, Swoope Rd. and Hewitt Rd., Augusta, [ph. Victor Laubach] 2 Sep 2021; accepted Category 1.

One individual, 37°51′51.96″N 79°29′5.22″W, Rockbridge, [ph. Richard Rowe and Jason Hattersley] 4 Oct 2022; accepted Category 1.

Heermann's Gull (*Larus heermanni)*: two records totaling two individuals as follows:

One third-cycle, Virginia Beach oceanfront, Virginia Beach, [ph. Justin Fuller, submitted Rob Bielawski] 12 May 2021; accepted Category 1. Second state record.

One first-cycle, City Marina, Hopewell, [ph. Allen Bryan, submitted Matthew Anthony] 27 Oct 2021; accepted Category 1. Third state record.

Lesser Black-backed Gull (*Larus fuscus*): one record of a single individual as follows:

One individual, Broadway Wastewater Treatment Plant, Rockingham, [ph. MattGingerich, Diane Lepkowski, Dave Wendelkin, William Leigh and Cory Taylor] 12 Oct 2021; accepted Category 1.

European Storm-Petrel (*Hydrobates pelagicus*): one record of a single individual as follows:

One individual, pelagic waters (36.939, -74.989), Northampton, [† Edward S. Brinkley and David Clark, submitted by Matthew Anthony] 9 Aug 2020; accepted Category 2. First state record.

Roseate Spoonbill (*Platalea ajaja*): one record of a single individual as follows:

One individual, James River Marina, Newport News, [ph. Allison Ohlgren, Brad Conn, Marty Moliken, Nick Jordan and Ashley Flora] 12 Aug 2021; accepted Category 1.

Western Kingbird (*Tyrannus verticalis)*: one record of a single individual as follows:

One individual, State Route 626 (Pin Oak Road), Prince Edward, [ph. C. Michael Stinson and Tanya Stinson] 18 Sep 1997; accepted Category 2.

Say's Phoebe (*Sayornis saya*): one record of a single individual as follows:

One individual, Smithleigh Lake (private), Augusta, [ph. Victor Laubach] 28 Jan 2021; accepted Category 1.

White Wagtail (*Motacilla alba*): one record of a single individual as follows:

One individual, Fort Monroe, Hampton, [ph. Caitlin Kufahl, Sarah O'Reilly, and Carolyn Morgan; submitted Matthew Anthony] 12 Apr 2021; accepted Category 1. First state record.

Green-tailed Towhee (*Pipilo chlorurus)*: one record of a single individual as follows:

One individual, Sky Meadows State Park, Fauquier, [ph. Chris Fafard, submitted Patrick Lewis] 26 Dec 2020; accepted Category 1.

Bullock's Oriole (*Icterus bullockii*): one record of a single individual as follows:

One individual, private residence, Harrisonburg, [ph. Kathleen Fovargue and Arthur Fovargue] 29 Dec 2020; accepted Category 1.

Western Meadowlark (*Sturnella neglecta*): one record of a single individual as follows:

One individual, Drummond Farm, James City, [ph. Brian Taber, submitted Matthew Anthony] 19 Dec 2020; accepted Category 1. First state record.

Records accepted by expedited review

All submissions accepted Category 1 with photographic documentation, except where noted otherwise.

Eurasian Wigeon (*Mareca Penelope*): two records totaling three individuals as follows:

One female and one male, McCormick's Mills & Willow Lake, Augusta/Rockbridge [ph. Erin Hanley] 21-31 Dec 2022; https://ebird.org/checklist/S124361084

One male, Dutch Gap Conservation Area/Henricus Historical Park, Chesterfield [ph. Bill Wood] 31 Dec 2021-7 Feb 2022; https://ebird.org/checklist/S99794512

Eurasian Green-winged Teal (*Anas crecca crecca*): one record of a single individual as follows:

One male, Middlesex Drive Pond, Loudoun [ph. P. Lewis] 6 Nov 2021-16 Mar 2022; https://ebird.org/checklist/S97214193

Common Eider (*Somateria mollissima*): Two records possibly totaling two individuals as follows:

One female, Grandview Nature Preserve, Hampton [ph. Nancy Barnhart] 6 Jan 2022; https://ebird.org/checklist/S100240034

One female, Grandview Nature Preserve, Hampton [ph. Paul Bielfeldt] 30 Apr-8 Jul 2022; https://ebird.org/checklist/S108872560

Harlequin Duck (*Histrionicus histrionicus*): Two records totaling three individuals as follows:

One male and one female, Grandview Nature Preserve, Hampton [obs. Steven Freed; later ph. Kenneth Barnhart & Nancy Barnhart] 10 Jan-6 Feb 2022; https://ebird.org/checklist/S100610040

One adult male, Big Falls Rapids, Montgomery/Giles [ph. Barb Glaser & Joshua Ward] 17-27 Dec 2022; https://ebird.org/checklist/S124098552

Eared Grebe (*Podiceps nigricollis*): one record of a single individual as follows:

One, Broadway Wastewater Treatment Plant (Restricted), Rockingham [ph. Huck Hutchens] 23 Oct-2 Dec 2022; https://ebird.org/checklist/S121184863

Western Grebe (*Aechmophorus occidentalis*): one record of a single individual as follows:

One, Sandbridge Beach, Virginia Beach [obs. Gary Witmer; later ph. Baxter Beamer & Martina Nordstrand] 29 Dec 2021-19 Jan 2022; https://ebird.org/checklist/S99641370

Purple Gallinule (*Porphyrio martinica*): one record of a single individual as follows:

One adult, Greensprings Interpretive Trail, James City [ph. Randy Fisher] 19 Apr 2022; https://ebird.org/checklist/S107473534

Limpkin (*Aramus guarauna*): two records totaling two individuals as follows:

One, Botetourt Center at Greenfield, Botetourt County [ph. Linda Christenson] 30 May-20 Jun 2022; https://ebird.org/checklist/S111702475

One, Hope Rd., Stafford [ph. Barbara Martin] 7-29 Jun 2022; https://ebird.org/checklist/S112413062

Black-necked Stilt (*Himantopus mexicanus*): two records totaling three individuals as follows:

Two, Hog Island WMA, Surry [ph. Cindy Schulz, Stuart Sweetman, et al.] 23 Apr 2022; https://ebird.org/checklist/S107794760

One, Dutch Gap Conservation Area, Chesterfield [ph.Arun Bose] 24 Apr 2022; https://ebird.org/checklist/S107917519

American Avocet (*Recurvirostra americana*): five records totaling eight individuals as follows:

One, Smith Mountain Lake, Franklin [ph. Mark Kosiewski] 4 Jul 2022; https://ebird.org/checklist/S114405600

Two, Belle Haven Park/Hunting Creek Bridge, Fairfax [obs. Kurt Gaskill; later ph. Joan Mashburn] 20 Jul-2 Aug 2022; https://ebird.org/checklist/S115481691

One, Target Distribution Center Pond, Augusta [ph. Huck Hutchens] 23 Jul 2022; https://ebird.org/checklist/S115613738

One, Occoquan Bay NWR, Prince William [ph. John Aleknavage] 10 Aug 2022; https://ebird.org/checklist/S116674246

Three, Staunton River Mudflats, Halifax [obs. Jeffrey Blalock; ph. Clyde Wilson] 28 Aug-22 Sep 2022; https://ebird.org/checklist/S117721945

Wilson's Plover (*Charadrius wilsonia*): one record of a single individual as follows:

One, Smith Island, Northampton [ph. Mario Balitbit] 20Apr 2022; https://ebird.org/checklist/S107576328

Bar-tailed Godwit (*Limosa lapponica*): two records possibly totaling two individuals as follows:

One, Chincoteague NWR, Accomack [ph. Dave Brooke] 27-28 Sep 2022; https://ebird.org/checklist/S119543262

One, Chincoteague NWR (South Wash Flats), Accomack [ph. Joanne Laskowski] 6 Dec 2022; https://ebird.org/checklist/S123572556

Hudsonian Godwit (*Limosa haemastica*): one record totaling two individuals as follows:

Two, Hog Island WMA, Surry [ph. Nancy Barnhart; later ph. Cindy Hamilton] 10-29 Aug 2022; https://ebird.org/checklist/S117424697

Marbled Godwit (*Limosa fedoa*): one record totaling two individuals as follows:

Two, Hog Island WMA, Surry [1, ph. Cindy Hamilton] 22 Aug-17 Sep 2022; https://ebird.org/checklist/S117424697

Ruff (*Calidris pugnax*): two records totaling two individuals as follows:

One female, Craney Island DMMA, Portsmouth [ph. Lee Schuster, Brian Taber,Bill Williams & David Youker] 21 Apr 2022; https://ebird.org/checklist/S107724952

One, Chincoteague NWR, Accomack [ph. & vid. Bill Hohenstein] 5 Jul 2022; https://ebird.org/checklist/S114499780

White-rumped Sandpiper (*Calidris fuscicollis*): two records totaling 36 individuals as follows:

35, Staunton River Mudflats, Halifax [ph.Adam D'Onofrio & Paul Glass] 2 Oct 2022 https://ebird.org/checklist/S119864306

One, Braeburn Training Center Pond, Albemarle [ph. Baxter Beamer & Pete Myers] 9 May 2022; https://ebird.org/checklist/S109466304

Buff-breasted Sandpiper (*Calidris subruficollis*): one record totaling three individuals as follows:

Three, Shenandoah Valley Produce Auction / Lumber Mill Road, Rockingham [obs. Douglas Ruby; obs. Mike Donaldson; later ph. Greg Moyers] 6-17 Sep 2022; https://ebird.org/checklist/S118584456

Willet (*Tringa semipalmata*): three records totaling four individuals as follows:

One, West Augusta Road, Augusta [ph. Ira Lianez] 30 Apr 2022;https://ebird.org/checklist/S108484605

Two, Guthrie Road, Augusta [ph. Herbert Larner & Vic Laubach] 7 May 2022; https://ebird.org/checklist/S109275223

One, Goose Point Recreation Area, Patrick [ph. Greg Swick] 4 Aug 2022; https://ebird.org/checklist/S116362140

Wilson's Phalarope (*Phalaropus tricolor*): two records totaling four individuals as follows:

One, Broadway Wastewater Treatment Plant, Rockingham [ph. Greg Moyers] 6-11 Aug 2022; https://ebird.org/checklist/S116469061

Three, Hog Island WMA, Surry County [ph. Terri Cuthriell] 4-13 Sep 2022; https://ebird.org/checklist/S118097379

Red-necked Phalarope (*Phalaropus lobatus*): eight records totaling 14 individuals as follows:

Three, Hunting Creek Bridge, Fairfax [obs. Nick Newberry; later ph. Martin Sneary] 27 May 2022 https://ebird.org/checklist/S111436625

One female, Penicks Mill, Bedford [ph. Bob Epperson] 27 May 2022; https://ebird.org/checklist/S111762477

One female, Sandy River Reservoir, Prince Edward [ph. Evan Spears] 26-27 May 2022; https://ebird.org/checklist/S111370409

One, Staunton River Mudflats, Halifax County [ph. Paul Glass] 25 Sep 2022; https://ebird.org/checklist/S119425314

Two, Virginia Tech Airport, Montgomery [ph. Baxter Beamer, Will Burgoyne, Max Nootbaar, Martina Nordstrand] 1 Oct 2022; https://ebird.org/checklist/S119769233

Four, Broadway Wastewater Treatment Plant (restricted access), Rockingham [obs. Diane Holsinger; later ph. Matt Gingerich] 3-6 Oct 2022; https://ebird.org/checklist/S119909499

One, undisclosed private property, Rockbridge [ph. Dick Rowe] 4 Oct 2022; https://ebird.org/checklist/S119979895

One, Aquia Landing Park, Stafford [ph. Jim Goehring, Michael Lott, Robert Stamps] 5 Oct 2022; https://ebird.org/checklist/S120006698

Red Phalarope (*Phalaropus fulicarius*): one record of a single individual as follows:

One, Sandy River Reservoir (Dam and Boat Launch Area), Prince Edward [ph. Evan Spears] 9 Mar 2022; https://ebird.org/checklist/S104524744

Razorbill (*Alca torda*): one record of five individuals as follows:

Five, Ft. Monroe, Hampton [ph. Eric Alton & Tammy Conklin] 21-26 Feb 2022; https://ebird.org/checklist/S103365122

Black-legged Kittiwake (*Rissa tridactyla*): one record of a single individual as follows:

One immature, Chincoteague NWR (Swan Cove), Accomack [ph. Sarah Rackowski] 29 Dec 2022; https://ebird.org/checklist/S124823759.

Iceland Gull (*Larus glaucoides*): one record of two individuals as follows:

Two, Loudoun County Solid Waste Management, Loudoun [ph. Bob Abrams & Pat Whittle] 28 Dec 2022; https://ebird.org/checklist/S124798931

Glaucous Gull (*Larus hyperboreus*): one record of a single individual as follows:

One immature, Parrot River Road, Montgomery/Pulaski [ph. Max Nootbaar; later ph. Peter Wynnyk] 27-30 Jan 2022; https://ebird.org/checklist/S101586332

White-winged Tern (*Chlidonias leucopterus*): one record of a single individual as follows:

One, Chincoteague NWR, Accomack [ph. Marcia Yeip] 9-15 May 2022; https://ebird.org/checklist/S109509525

Roseate Tern (*Sterna dougallii*): three records totaling four individuals as follows:

One, Cedar Island, Accomack [ph. David Clark, Cindy Hamilton, Terry Moore] 1 Jun 2022; https://ebird.org/checklist/S111903785

Two, First Landing SP, Virginia Beach [obs. Andrew Baldelli; later ph. Rob Bielawski] 6-24 Jul 2022; https://ebird.org/checklist/S115662026

One adult, Back Bay NWR, Virginia Beach [ph. Robert Ake & David Clark] 15 Jul 2022; https://ebird.org/checklist/S115136598

White-faced Storm-Petrel (*Pelagodroma marina*): one record of a single individual as follows:

One, Norfolk Canyon, Northampton [ph. Arun Bose, et al.] 7 Aug 2022; https://ebird.org/checklist/S116530980

Leach's Storm-Petrel (*Hydrobates leucorhous*): one record of a single individual as follows:

One, Kerr Reservoir, Mecklenburg [ph. Adam D'Onofrio & Paul Glass] 2 Oct 2022; https://ebird.org/checklist/S119838275

Black-capped Petrel (*Pterodroma hasitata*): one record of a single individual as follows:

One, Virginia Offshore Waters (37°00'05.62"N, 74°43'02.83"W), Northampton [obs. Baxter Beamer, Sage Church, many obs.; ph. Rob Bielawski] 5 Mar 2022; https://ebird.org/checklist/S104386047

Great Shearwater (*Ardenna gravis*): eight records totaling 52 individuals as follows:

36, Chincoteague NWR, Accomack [6, ph. Trevor MacLaurin] 7 Jun-9 Jul 2022; https://ebird.org/checklist/S112385806

One, Smith Island, Northampton [ph. Mario Balitbit] 8-17 Jun 2022; https://ebird.org/checklist/S112477853

Two, Mariner's Point, Accomack [obs. Andrew Rapp; later ph. Chad Kauffman] 8-16 Jun 2022; https://ebird.org/checklist/S112898803

One, Metompkin Island, Accomack [ph. Mario Balitbit] 5 Jul 2022; https://ebird.org/checklist/S114488307

Nine, Rudee Inlet, Virginia Beach [1, ph. Taryn Paul *fide* Rudee Tours] 9 Jul 2022; https://ebird.org/checklist/S114705551

One, Back Bay NWR, Virginia Beach [ph. Ray Doyle] 16 Jul 2022;https://ebird.org/checklist/S115244487

One, Ft. Story, Virginia Beach [ph. Steve Myers] 22 Jul 2022; https://ebird.org/checklist/S115569592

One, 88th Street Beach, Virginia Beach [ph. Reuben Rohn] 25 Jul 2022; https://ebird.org/checklist/S115766548

Wood Stork (*Mycteria americana*): one record of a single individual as follows:

One, Dick Cross WMA, Mecklenburg [ph. Clyde Wilson & Donna Wilson] 30 Jul-2 Aug 2022; https://ebird.org/checklist/S116039421

Brown Booby (*Sula leucogaster*): seven records totaling seven individuals as follows:

One adult, pelagic waters (36°50'02.5" N, 75°53'23" W), Virginia Beach [obs. Andrew Rapp, ph. Steve Myers et al.] 15 May 2022; https://ebird.org/checklist/S110311110

One immature, inshore waters (36°54'32.5" N, 75°59'04.9" W), Virginia Beach [ph. Justin Fuller *fide* Rudee Tours] 7 Jul 2022; https://ebird.org/checklist/S114602151

One immature, JEB Ft. Story, Virginia Beach [ph. Steve Myers] 8 Jul 2022; https://ebird.org/checklist/S114643873

One adult, pelagic waters, Northampton [ph. Bhaskar Bharath

fide Rudee Tours] 17 Jul 2022; https://ebird.org/checklist/S115292074

One, Norfolk Canyon, Northampton [ph. Andrew Baldelli, June McDaniels, et al.] 7 Aug 2022; https://ebird.org/checklist/S116555339

One, Tangier Island, Accomack [ph. Jason Bojczyk] 7 Sep 2022;https://ebird.org/checklist/S118307103

One, Hungry Mother SP, Smyth [ph. Lance Jessee] 23 Sep-17 Oct 2022; https://ebird.org/checklist/S119292723

Anhinga (*Anhinga anhinga*): six records totaling 21 individuals as follows:

Eight, Carson Wetland, Prince George [obs. Andrew Rapp, later ph. Bob Epperson & John Pancake] 27 Apr-4 Jun 2022; https://ebird.org/checklist/S108299952

Three, Briery Creek WMA, Prince Edward [ph. Evan Spears] 4 May 2022; https://ebird.org/checklist/S108900313

Seven, Richmond Turnpike (Ruther Glen), Caroline [ph. David Chewning] 9 May-18 Jun 2022; https://ebird.org/checklist/S109431550

One, Meadville Rd., Halifax [ph. Jeffrey Blalock] 10 Jul 2022; https://ebird.org/checklist/S114773906

One, Swift Creek Reservoir, Chesterfield [ph. Larry Tipton & Lucia Tipton] 5 Sep 2022; https://ebird.org/checklist/S118198618

One, Brunswick Lake Boat Ramp, Brunswick [ph. Teresa Mewborn] 14-16 Dec 2022; https://ebird.org/checklist/S123947312

American White Pelican (*Pelecanus erythrorhynchos*): two records totaling two individuals as follows:

One, Staunton River SP, Halifax [ph. Hannah Glass & Paul Glass] 17 Jul-1 Aug 2022; https://ebird.org/checklist/S115257149

One, Hunting Creek Bridge, Fairfax [ph.Todd Kiraly] 3 Aug 2022; https://ebird.org/checklist/S116285411

Brown Pelican (*Pelecanus occidentalis*): two records totaling two individuals as follows:

One, College Landing Park, Williamsburg [ph. Paula Perdoni] 1 Feb 2021; https://ebird.org/checklist/S101853188

One, Town of Occoquan, Prince William [ph. John Aleknavage] 25 Jan 2022; https://ebird.org/checklist/S101422006

Snowy Egret (*Egretta thula*): six records totaling six individuals as follows:

One, Difficult Creek, Halifax [ph. Jeffrey Blalock] 12 Apr 2022;https://ebird.org/checklist/S106865323

One, Washington Park, City of Roanoke [ph. Kirk Gardner] 13-16 Apr 2022;https://ebird.org/checklist/S106970847

One, Monticello High School Lake, Albemarle [ph. David Shoch] 27 May 2022; https://ebird.org/checklist/S111391596

One, Dulles Airport, Loudoun [ph. John Denice] 6 Jun 2022; https://ebird.org/checklist/S112334013

One, Staunton River SP, Halifax/Charlotte [obs. Jeffrey Blalock; later ph. Hannah Glass & Paul Glass] 15-18 Jul 2022; https://ebird.org/checklist/S115257149

One, Reusens Dam, Bedford/Amherst [ph. Baxter Beamer] 29 Jul-24 Aug 2022; https://ebird.org/checklist/S115965538

Tricolored Heron (*Egretta tricolor*): one record of a single individual as follows:

One immature, Staunton River Mudflats, Halifax [obs. Jeffrey Blalock; later ph. Adam D'Onofrio & Paul Glass] 20 Aug-14 Sep 2022; https://ebird.org/checklist/S117270593

Cattle Egret (*Bubulcus ibis*): one record of a single individual as follows:

One, Roanoake Sewage Treatment Plant, City of Roanoke [ph. Matt Anthony, Jason Davis & Kent Davis] 6 Apr 2022; https://ebird.org/checklist/S106390044

White Ibis (*Eudocimus albus*): one record of two individuals as follows:

Two, Linville Creek, Rockingham [ph. Lakota Bondurant] 6-26 Aug 2022; https://ebird.org/checklist/S116467124

White-faced Ibis (*Plegadis chihi*): one record of a single individual as follows:

One, Chincoteague NWR, Accomack [ph. Eric Liebgold] 7-8 Jun 2022; https://ebird.org/checklist/S112413124

Roseate Spoonbill (*Platalea ajaja*): three records totaling four individuals as follows:

One immature, Back Bay NWR, Virginia Beach [ph. Elena Bersani] 16- 17 Jul 2022; https://ebird.org/checklist/S115168440

One, private property, Rockingham [ph. Matt Gingerich] 7-13 Aug 2022; https://ebird.org/checklist/S116488070

Two, Hog Island WMA, Surry [ph. Terri Cuthriell] 8 Sep 2022;https://ebird.org/checklist/S118345609

Ash-throated Flycatcher (*Myiarchus cinerascens*): three records totaling three individuals as follows:

One, Tracks Lane, Northampton [ph. Ezra Staengl & Theo Staengl] 13-16 Nov 2022; https://ebird.org/checklist/S122349494

One, Harris Teeter Retention Pond, Virginia Beach [ph. Amy Myers & Steve Myers] 13-29 Nov 2022; https://ebird.org/checklist/S122356291

One, Sky Meadows SP (Fishing Pond), Fauquier [ph. Jill Barker, Ginger Hays] 14 Nov-5 Dec 2022; https://ebird.org/checklist/S122441607

Western Kingbird (*Tyrannus verticalis*): one record of a single individual as follows:

One, James River Park (Huguenot Flatwater), City of Richmond [obs. Annie McEntee, Sissy McEntee, Dorie Stolley, et al.; later ph. Arun Bose] 15 Jan-21 Feb 2022; https://ebird.org/checklist/S100913199

Gray Kingbird (*Tyrannus dominicensis*): two records possibly of a single individual as follows:

One, Seaside Road at Latimer Siding Road, Northampton [ph. Brian Taber] 18 Oct 2022; https://ebird.org/checklist/S120914870

One, Seaside Road at Braxton Farm Drive (later at Cedar Grove Drive), Northampton [ph. Tommy Maloney] 20-23 Oct 2022; https://ebird.org/checklist/S121002096

Scissor-tailed Flycatcher (*Tyrannus forficatus*): one record of a single individual as follows:

One, Leedstown Road, Westmoreland [ph. Frederick

Atwood] 4-20 Jun 2022; https://ebird.org/checklist/S112133220

Alder Flycatcher (*Empidonax alnorum*): two records totaling two individuals as follows:

One, Still Meadow Trail, Albemarle [a. r. Guy Babineau & Susan Babineau] 14-19 May 2022; https://ebird.org/checklist/S110005607

One, Bristoe Station Battlefield, Prince William [a. r. & ph. Toby Hardwick] 16 May 2022; https://ebird.org/checklist/S110364649

Say's Phoebe (*Sayornis saya*): two records totaling two individuals as follows:

One, Mill Creek Road, Page [ph. Alex Shipherd] 3 Dec 2022; https://ebird.org/checklist/S123412591

One, Broadway Wastewater Treatment Plant, Rockingham [obs. Diane Holsinger, later ph. Matt Gingerich] 16 Dec 2022; https://ebird.org/checklist/S124060625

Common Raven (*Corvus corax*): two records totaling three individuals as follows:

Two, Stony Run Athletic Complex, Newport News [ph. Matt Anthony] 27 Mar-10 Apr 2022; https://ebird.org/checklist/S105701691

One, Back Bay Landing Road, Virginia Beach [ph. Rob Bielawski] 17 Jul 2022; https://ebird.org/checklist/S115246642

Cave Swallow (*Petrochelidon fulva*): two records totaling two individuals as follows:

One, Pleasure House Point Natural Area, Virginia Beach [ph. Mike Collins] 1 Dec 2022; https://ebird.org/checklist/S124002672

One, Sandy River Reservoir (Dam and Boat Launch Area), Prince Edward [ph. Mike Stinson] 3-4 Dec 2022; https://ebird.org/checklist/S123404351

Varied Thrush (*Ixoreus naevius*): two records totaling two individuals as follows:

One, Lakewood Park, Virginia Beach [ph. Suzanne Phelps] 20 Nov-1 Dec 2022; https://ebird.org/checklist/S122791866

One, Wellington Neck Rd., Northampton [ph. Roberta Kellam] 22 Nov 2022; https://ebird.org/checklist/S122828605

Gambel's White-crowned Sparrow (*Zonotrichia leucophyrs gambelii*): two records totaling two individuals as follows:

One adult, Harris Teeter Retention Pond, Virginia Beach [ph. Tommy Maloney] 31 Oct 2021-11 Apr 2022; https://ebird.org/checklist/S96919800

One adult, Courthouse Woods, Virginia Beach [ph. Rob Bielawski] 22 Feb 2022; https://ebird.org/checklist/S103535639

LeConte's Sparrow (*Ammospiza leconteii*): two records totaling two individuals as follows:

One, Upper Brandon, Prince George [ph. Allen Bryan] 31 Jan 2022; https://ebird.org/checklist/S101776354

One, Curles Neck Farm, Henrico [obs. Ellison Orcutt; ph. Matt Crittenden et al.] 13 Nov 2022; https://ebird.org/checklist/S122378612

Nelson's Sparrow (*Ammospiza nelsoni*): two records totaling two individuals as follows:

One, Staunton River Mudflats, Halifax [ph. Paul Glass] 30 Oct 2022; https://ebird.org/checklist/S121588510

One, Sandy River Reservoir (Dam and Boat Launch Area), Prince Edward [ph. Mike Stinson] 29-30 Oct 2022; https://ebird.org/checklist/S121530361

Henslow's Sparrow (*Centronyx henslowii*): two records totaling two individuals as follows:

One, Innovation Drive Marsh, Montgomery [ph. Logan Anderson] 20 Apr 2022; https://ebird.org/checklist/S107530597

One, Waples Mill Meadow Park, Fairfax [ph. Daniel Lebbin, Megan Massa & Nick Newberry] 10-14 Oct 2022; https://ebird.org/checklist/S120384044

Ipswich Savannah Sparrow (*Passerculus sandwichensis princeps*): one record of a single individual as follows:

One, Grassdale Road, Fauquier [ph. Mikie Catanzara & Carlos Sanchez] 9-13 Jan 2022; https://ebird.org/checklist/S100454554

Bullock's Oriole (*Icterus bullockii*): three records totaling three individuals as follows:

One adult male, South Shore Estates, Virginia Beach [obs. James Marcum; later ph. David Clark] 15 Oct 2021-19 Jan 2022; https://ebird.org/checklist/S97018179

One immature male, Great Bridge, Chesapeake [ph. Debbie Shelton] 28 Nov 2021-4 Mar 2022; https://ebird.org/checklist/S100673163

One adult male, Lake Smith, Virginia Beach [ph. Bob Zabot] 15 Feb-8 Mar 2022; https://ebird.org/checklist/S104510436

Brewer's Blackbird (*Euphagus cyanocephalus*): one record of 16 individuals as follows:

16, Breeze Farms, Virginia Beach [ph. Andrew Baldelli & June McDaniels] 17 Jan-16 Mar 2022; https://ebird.org/checklist/S102152247

Townsend's Warbler (*Setophaga townsendii*): two records totaling two individuals as follows:

One, Occoquan Bay NWR, Prince William [ph. Sandra Rosenhouse] 20 Apr 2022; https://ebird.org/checklist/S107652036

One, Kiptopeke SP, Northampton [ph. Arun Bose] 25 Sep 2022; https://ebird.org/checklist/S119394042

Western Tanager (*Piranga ludoviciana*): two records totaling two individuals as follows:

One, James River Park—42nd Street, City of Richmond [obs. Jason & Lesley Bullock, later ph. Paul Bedell] 16 Apr 2022; https://ebird.org/checklist/S107175693

One, Potomac Station, Loudoun [ph. Monica Schnicke] 18 Apr 2022; https://ebird.org/checklist/S107567328

Black-headed Grosbeak (*Pheucticus melanocephalus*): one record of a single individual as follows:

One male, Talleysville, New Kent County [ph. Keith Kennedy] 12 Jun 2022; https://ebird.org/checklist/S112755526

Painted Bunting (*Passerina ciris*): one record of a single individual as follows:

One adult male, private residence, Prince William [ph. Celeste Zalewski] 3 Jan 2022; https://ebird.org/checklist/S100094188

Records not accepted

Franklin's Gull (*Leucophaeus pipixcan*): One individual, Broadway Wastewater Treatment Plant, Rockingham, 29 Jun 2021. The committee determined that the description provided did not sufficiently rule out similar species.

Black-billed Magpie (*Pica hudsonia*): One individual, Fort Hunt Park, Alexandria, 15 Feb 2021. This record was submitted with photographic documentation which the committee concluded did not show this species, and likely instead showed an American Robin with a pigment abnormality.

Lark Bunting (*Calomospiza melanocorys*): Two individuals, private residence, Rockbridge, 12 Mar 2022. This record was submitted with photographic documentation which the committee determined showed Red-winged Blackbirds.

Cassiar Dark-eyed Junco (*Junco hyemalis*): Two individuals, Crozet, Albemarle, 18 Jan 2022. The committee determined that, while suggestive of this taxon, the photographs and written documentation submitted were not sufficient to establish this notoriously complex identification beyond all doubt.

Submission not reviewed by the committee

Neotropic Cormorant (*Nannopterum brasilianum*): One individual, Algonkian Regional Park, Loudoun, 28 Aug 2021. While there is little dispute about the identification of this bird, the committee could not find any evidence that it occurred in Virginia. A review of eBird reports of this individual did not turn up any indication that the bird was seen away from the Potomac River, which at this location is entirely in Maryland.

Literature Cited

Chesser, R.T., S.M. Billerman, K.J. Burns, C. Cicero, J.L. Dunn, B.E. Hernández-Baños, R.A. Jimenez, A.W. Kratter, N.A. Mason, P.C. Rasmussen, J.V. Remsen, Jr., D.F. Stotz, K. Winker. 2022. Sixty-third Supplement to the American Ornithological Society's Check-list of North American Birds. Ornithology 139:ukac020

Virginia Christmas Bird Counts: 2022-2023 Season

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The National Audubon Society's (Audubon) special pandemic protocols for conducting Christmas Bird Counts (CBC) remained in effect for the 2022-2023 season. Fifty-six counts were conducted in Virginia in the 2022-2023 CBC season. The results from three of these counts (Chesapeake Bay, Darlington Heights, and Giles County) are not submitted to Audubon for various reasons, but are included as part of this summary of Virginia CBCs. The Bristol, Tennessee count results are also included because most of the count circle is in Virginia (Audubon includes this count with the results for Tennessee). The Chatham and Clifton Forge CBCs were not conducted this season. The total number of species tallied on the 2022-2023 counts was 206, which is slightly lower than the 2021-2022 season total of 211 and the 2020-2021 season total of 214. The total number of individual birds was 774,148 which is also lower than the 2021-2022 season total of 827,870 (6.4% lower) and the 2020-2021 total of 820,867 (5.7% lower).

There were a few compiler changes in 2021-2022. Jeff Blalock who started the Banister River CBC in 1986 handed over compiling duties to Adam D'Onofrio this year after compiling this count for 36 years. Barry Kinzie initiated the Fincastle CBC in 1974 and now after compiling the count for 49 years, Andrew Newcomb took over as the compiler. Chris Sokol is the new compiler for the Giles County CBC, relieving Bill Opengari. Ashley Studholme assumed the compiling duties for the Nokesville CBC, replacing Kim Hosen. Finally, Larry Frey tapped Greg Justice to be the new compiler for the Northern Shenandoah Valley CBC. A few counts had a record number of observers this year: Walkerton with 39 observers, Middle Peninsula with 56, and Washington's Birthplace with 30.

Figure 1. The Black-throated Gray Warbler, a new species on Virginia CBCs, discovered at Fort Belvoir. Photo by Marisa Rositol.

A new species was added to state CBC records this year as a single Black-throated Gray Warbler was discovered on the Fort Belvoir CBC (Figure 1). There are a few other documented sightings of Black-throated Gray Warbler in Virginia but this is the first on a Christmas Bird Count. Coincidentally, the first record of a Black-throated Gray Warbler in Virginia occurred on 1 Oct 1949 at Fort Belvoir!

There were three cases in which a species was located only during Count Week (CW) rather than on the day of the CBC: Red-necked Grebe at Nansemond River, Northern Parula at Fort Belvoir, and LeConte's Sparrow at Back Bay (Figure 2). Surprisingly these species were missed completely for the 2022-23 CBC season in Virginia. No Common Eiders were recorded despite 3 logged in 2021 and 10 in 2020; they were only missed two other times in the last ten years (2013 and 2017). Little Blue Heron was also missed this year. The only other time this happened in the last ten years was in 2014. The last time that no Red Knots were reported was just over twenty years ago, in 2002.

Figure 2. A LeConte's Sparrow, photographed 30 Dec 2022 during Count Week on the Back Bay CBC. Photo by Rob Bielawski.

There were some high counts of interest, some of which set local and/or state records.

- A total of 10 Blue-winged Teal were spotted, 6 at Back Bay and 4 at Hopewell. This is up from only 2 found in 2020 and 3 in 2021.

- There were 317 Northern Harriers observed this year; this is the highest number since 317 were also seen in 2008 but it doesn't break the record of 340 set in 1998. Of these, 45 were counted on the Cape Charles CBC and that wasn't even a record high count there as 97 occurred at Cape Charles in 1976.
- A state record high of 272 Cooper's Hawks were identified this year. The previous record was 265 set in 2014. Local record high counts include: 7 at Washington's Birthplace, 14 at The Plains, 4 at Chancellorsville, 9 at Charlottesville, 15 at Blacksburg, 3 at Giles County, and 2 at Cedars Preserve-Jonesville where it was a new species. Fort Belvoir's 21 Cooper's Hawks were the most logged on a CBC in the state this year, but that was not a record as 27 were seen there in 2004.
- Bald Eagle also set a state record high count of 1,666 this year. Again, new local record high numbers contributed: 61 at Newport News, 51 at Northumberland-Lancaster, 67 at Central Loudoun, 21 at Rappahannock, 17 at Rockingham County, 23 at Highland County, 3 at Mount Rogers-White Top Mountain, 11 at Glade Spring, 9 at Blackford, and 2 at Wise County where this was a new species. The 299 Bald Eagles found on the Brooke count were the highest number for a count in Virginia this year, but this wasn't the record there as 350 were seen at Brooke in 2019.
- The 15 Soras heard on these four CBCs were the most since the record high count of 25 set in 1975: 1 at Chincoteague, 1 at Back Bay, 10 at Hopewell which was a record high count there, and 3 at Fort Belvoir.
- The 257 Wilson's Snipe is the highest number since 286 were observed in 2007. Two counts set local record high counts for snipe: 68 at Hopewell and 8 at Manassas-Bull Run. The record high count for Wilson's Snipe on Virginia's CBCs is 558 seen in 1976.
- Northern Saw-whet Owl has been recorded five times in the last ten years. The 9 Northern Saw-whet Owls heard this year are the highest number since the record high count of 13 in 1997. These owls were detected on three counts: 1 at Cape Charles, 3 at Walkerton where it was a new species, and 5 at Fort Belvoir.
- The 5 Rufous Hummingbirds that were observed ties the record high for the state set in 2012 and again in 2013. One bird was found at Charlottesville, 1 at Lynchburg (Figure 3), 2 at Rappahannock, and 1 at Blacksburg.
- A new state record high count of 668 Hairy Woodpeckers was set, with help from the following local high counts: 26 at Brooke, 130 at Fort Belvoir, 16 at Glade Spring, and 5 at Cedars Preserve-Jonesville.

Figure 3. A Rufous Hummingbird photographed on 3 Dec 2022, the day after it was banded and positively identified as a female and subsequently observed on the Lynchburg CBC.
Photo by Bob Epperson.

- Dismal Swamp logged a local record high count of 4 Red-cockaded Woodpeckers this year. Given their restricted range in Virginia, these were the only Red-cockaded Woodpeckers reported on a Virginia CBC this year. The record high for the state is 5 set in 1971 when all 5 Red-cockaded Woodpeckers were seen at Back Bay.
- A state record high of 651 Common Ravens were counted. This includes these local high counts: 16 at Manassas-Bull Run, 5 at Chancellorsville, 40 at Rappahannock, 24 at Augusta County, and 8 at Breaks Interstate Park. The winter range for Common Raven may be expanding as this was a new species on two CBCs: 1 at Washington's Birthplace and 7 at Cedars Preserve-Jonesville.
- The 3,444 White-breasted Nuthatches are a new high count for Virginia CBCs. Contributing to this were several local record high counts: 38 at Newport News, 34 at Middle Peninsula, 100 at Brooke, 62 at Rappahannock, 77 at Rockingham County, and 89 at Lexington.
- Brown Thrasher had a record high count for the state of 305, with several local record high counts: 36 at Hopewell, 6 at Middle Peninsula, 1 at Mount Rogers-White Top Mountain where it was a new species, 2 at Buchanan, and 4 at Cedars Preserve-Jonesville.
- The 58 Orange-crowned Warblers were also a new state record high count, aided by two local record high counts: 15 at Back Bay and 12 at Hopewell. Orange-crowned Warblers were seen on seven other CBCs in Virginia.
- Common Grackle numbers surged this year to 109,671 the highest number in over 15 years since 141,094 were recorded in 2007. Over half of these grackles were tallied on the Warren CBC with 57,056, which

is a local record high count. "The grackles were not in roosts but passing over in continuous streams," according to compiler, Allen Hale (pers. comm.). The record high count for Common Grackles on Virginia CBCs is 12,076,281 set in 1965. The vast majority (12,000,000) of these were seen on what was the Chesapeake CBC (its count circle was centered 6.5 miles NE of Wallaceton in the city of Chesapeake and included the eastern edge of the Dismal Swamp, western part of Northwest River drainage, Great Bridge, Butts Station, Fentress, and Deep Creek) (Scott 1966). Unfortunately, no details about whether these grackles were counted in roosts or in flocks overhead were recorded.

- The 39 Baltimore Orioles came close to the record high count of 43 set in 2020 and 2021. They were found on eight counts: 2 at Little Creek, 7 at Nansemond River, 2 at Newport News, 11 at Williamsburg, 14 at Hopewell (record high count), 1 at Chancellorsville (new species (Figure 4)), 1 at Lynchburg and 1 at Blacksburg. A Baltimore Oriole was also spotted CW at Sandy River Reservoir Belvoir.

Figure 4. Baltimore Oriole (immature male), a new species on the Chancellorsville CBC (January 1, 2023). Photo taken January 4, 2023 by Rob Wilkerson.

There are always some species found in low numbers (both expectedly and unexpectedly).

- Only 3 Northern Bobwhite were detected on just two counts: 1 at Cape Charles and 2 at Williamsburg. This is quite a drop as their numbers have been at least in double digits for the state every year since 2007.
- Similarly, only 2 King Rails were found on just two counts: 1 at Back Bay and 1 at Fort Belvoir.
- The only American Avocets this season were 68 at Nansemond River.
- The sole Razorbill located was at Chesapeake Bay.

The numbers recorded for several species are at least somewhat encouraging.

- The 6 Ruffed Grouse spotted on two counts this year, 5 at Tazewell and 1 at Blackford, are the highest number seen in the past seven years since 12 were recorded in 2016. Given their scarcity today, it is hard to believe that the state record high count for Ruffed Grouse is 101 set in 1979
- The 4 American Bittern were the most observed in the last 10 years. Single bitterns were seen at Chincoteague, Back Bay, Dismal Swamp, and Fort Belvoir. The record high count for American Bittern is 67 set in 1975.
- This is only the third time in the past twenty years that more than 20 Barn Owls were reported, with 23 found on eleven counts: 1 at Nansemond River, 2 at Mathews (a record high count), 1 at Central Loudoun, 2 at The Plains, 1 at Warren, 3 at Calmes Neck, 5 at Shenandoah NP Luray, 4 at Rockingham County, 1 at Lexington, 1 at Tazewell, 2 at Bristol, plus a CW sighting at Glade Spring.
- American Kestrel numbers are encouraging, too, as the 604 observed is the highest number in fifteen years. This species was recorded on 50 of 56 counts, plus one CW sighting (and Washington, D.C. had 2).
- American Tree Sparrow continues to show up on a few counts, mostly around the Shenandoah Mountains, with 12 seen on six counts: 1 at Brooke, 1 at Calmes Neck, 2 at Northern Shenandoah Valley, 3 at Shenandoah NP Luray, 3 at Waynesboro, and 2 at Glade Spring.
- After being missed last year, 2 Lincoln's Sparrows showed up on two counts: 1 at Chincoteague and 1 at Back Bay.

Several sightings were interesting because the species are unexpected or at least they are not seen every year.

- 2 Greater White-fronted Goose were documented on two counts: 1 at Hopewell and 1 at Walkerton. There was also a CW sighting at Giles County.
- Augusta County reported the only Ross's Goose.
- A total of 33 Cackling Goose was identified on six counts: 3 (Richardson's subspecies) at Back Bay, 11 at Hopewell, 5 at Walkerton, 3 at Washington's Birthplace, 1 at Fort Belvoir, and 10 at Waynesboro.
- 3 Eurasian Wigeon were found on three counts: 1 at Chincoteague, 1 at Cape Charles, and 1 at Nansemond River.
- A surprising Harlequin Duck turned up, not on the Coastal Plain where it might be expected, but at Blacksburg in the Mountains and Valleys region (Figure 5).

Figure 5. Harlequin Duck seen on the Blacksburg CBC. Photo by Josh Ward.

- The only Ring-necked Pheasant (classified by the Virginia Avian Records Committee [VARCOM] as a Category 6 species in Virginia because it is introduced and there are no longer any known self-sustaining wild populations in the state) was discovered at Calmes Neck. Since 2000, Ring-necked Pheasant has been reported ten times, with the highest number of 8 all seen at Hopewell in 2002. In the last ten years, they have been found only twice, a single bird last year at Washington's Birthplace and in 2022 at Calmes Neck.
- American White Pelicans have been recorded on the Williamsburg CBC on five of the previous six CBCs, but not this year. The only sighting this year was the 7 photographed on the Brooke count where they were a new species (Figure 6). There was also a count week report for the Nansemond River CBC.
- Green Heron is turning up somewhere in Virginia nearly every year, with 1 at Lynchburg where Green Heron has been reported now for three years in a row, and 1 as a new species at Nansemond River.

Figure 6. American White Pelicans on the Brooke CBC. Photo by Henry Day.

Figure 7. Sandhill Cranes on the Glade Spring CBC. Photo by Monica Hoel.

- The only Sandhill Cranes were 4 photographed at Glade Spring (Figure 7); they were also seen during count week at Fort Belvoir.
- A single Piping Plover was photographed at Newport News (Figure 8). This bird was reported to eBird from 1 Dec 2022 to 10 Mar 2023. A Piping Plover was last documented on a Virginia CBC when 1 was seen at Cape Charles in 2017.

Figure 8. Piping Plover on the Newport News CBC. Photo by Robert 'Pete' Peterman.

- 2 Spotted Sandpipers were found on two counts: 1 at Newport News and 1 at Giles County where it was a new species for that count circle.
- Rare gull sightings this year were limited to Iceland Gull with 1 recorded at Little Creek and 2 at Central Loudon.
- A single White-winged Dove was recorded as a new species at Back Bay and was the only one documented on a Virginia CBC this year (Figure 9). This species has occurred two other times on Virginia CBCs, 1 in 1987 at Wachapreague and 1 in 2019 at Cape Charles.

Figure 9. White-winged Dove on the Back Bay CBC. Photo by Cindy Hamilton.

- Blue-gray Gnatcatcher was only reported on one count with 3 at Hopewell. It was also found at Blacksburg during CW.
- A surprising 20 Lapland Longspurs were discovered at Washington's Birthplace. This species has been missed four of the last ten years and this many have not been seen since 21 were recorded in 2012 with 17 at Central Loudoun and 4 at Blacksburg.
- After being missed twice in the last five years, 7 Snow Buntings turned up on three counts: 2 at Chincoteague, 2 at Newport News, and 3 at Mathews (Figure 10).
- 2 Nashville Warblers were detected on two counts: 1 at Cape Charles and 1 at Hopewell.

Figure 10. Snow Buntings on the Mathews CBC. Photo by Arun Bose.

- A single Clay-colored Sparrow was found at Chincoteague and also during CW at Back Bay.
- A single Lark Sparrow was recorded as a new species at Fincastle and it was the only one tallied this year. It was also reported during CW at Back Bay.
- An exciting new species at Washington's Birthplace was a single Yellow-headed Blackbird. This was the only Yellow-headed Blackbird recorded on a Virginia CBC this year and was last discovered on a CBC in the state thirty years ago at Dismal Swamp in 1993.
- The 12 Red Crossbills at Big Flat Mountain were the only ones observed this year. Red Crossbills have been seen on a Virginia CBC every year for the past five years now.
- The Finch Research Network forecasted movement of Evening Grosbeaks only into states bordering Canada in 2022 although also indicated, "some birds could be expected to go further south into the United States than usual." That possible movement further south extended into Virginia as a surprising 33 Evening Grosbeaks showed up on six counts here: 10 at Hopewell, 3 at Walkerton, 1 at Northumberland-Lancaster, 6 at Lynchburg, 1 at Rockingham, and 12 at Highland County where this is a local record high count.

Only a few hybrids were recorded for the 2022-2023 CBC season. Fort Belvoir and Walkerton participants found single geese that were Snow Goose X Canada Goose hybrids, representing a new hybrid for Virginia CBCs. American Black Duck X Mallard hybrids were discovered at Chincoteague where 2 were sighted and 1 was also seen at Washington, D.C.

Although not a 'countable' species in Virginia, Muscovy Duck is being reported on our CBCs, as it should be anywhere it is encountered. The species was first documented in 2019 with 1 at Newport News and 6 at Middle Peninsula. None were located in 2020 and 2021, but 7 showed up this year with 4 at Newport News and 3 at Mathews.

You may recall the 1990s Operation Migration project that trained captive-reared Whooping Cranes to migrate between Wisconsin and Florida, and Canada Geese to migrate south to South Carolina by following an ultralight aircraft. What you may not know is that Operation Migration also attempted to train Trumpeter Swans to migrate to the Chesapeake Bay area in the 1990s. Dr. William Sladen of The Swan Research Program of Environmental Studies at Airlie in Virginia partnered with Operation Migration in the hopes of reestablishing migrating Trumpeter Swans to Virginia. The project was successful in that Trumpeter Swans did follow the ultralight to the Airlie area west of the upper Chesapeake Bay in Virginia, but the birds did not migrate north in the spring. These original tagged

swans became permanent residents and began successfully reproducing in Virginia. They are classified by VARCOM as Category 5 birds, i.e., an introduced species that is currently maintaining self-sustaining populations in Virginia According to Todd Day, these birds disperse somewhat in summer but typically return to ponds in the Airlie area in winter. In 2005, Trumpeter Swan was first reported on a Virginia CBC as a count week sighting at The Plains, which is near Airlie. Over the next ten years, Trumpeter Swans were only found observed four times, in 2007, 2008, 2010, and 2012. These records were mostly for The Plains CBC but single swans were discovered at Roanoke in 2010 and at Calmes Neck in 2012. Since 2016, Trumpeter Swan has been recorded every year and on eight other counts (Table 1). Until this year, The Plains CBC compiler only included Trumpeter Swans that could be identified as not being part of the original Operation Migration project (i.e., swans without patagial tags used in the original project). After lengthy discussions with Geoff LeBaron, National Audubon Society Christmas Bird Count Director, and Todd Day, who vets many Virginia eBird checklist submissions, Audubon now recommends that, because these birds make up a self-sustaining population in Virginia, all Trumpeter Swans (wild or feral) should be counted on Virginia CBCs and be included in the Audubon and eBird data bases. This also applies to these other birds classified by VARCOM as Category 5 species: Mute Swan, Rock Pigeon, Eurasian Collared-Dove, European Starling, House Sparrow, and House Finch (LaBaron, pers. comm.; Day, pers. comm.)

As in the past, species data for all of the Virginia CBCs have been entered into one large table. This comprehensive table listing the fifty-six counts with all of the species reported on each count plus the numbers for each species can be viewed by clicking on the 2022-2023 link on the Christmas Bird Count page on the VSO website (https://www.virginiabirds.org/events/christmas-bird-counts). Details on individual Audubon CBCs can also be found on the National Audubon Society's Christmas Bird Count website at http://netapp.audubon.org/cbcobservation/.

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Table 1. Trumpeter Swan records on Virginia Christmas Bird Counts from 2016 to 2022.

Count circle	2016	2017	2018	2019	2020	2021	2022
Mathews County		1	1				
Central Loudoun			7				
The Plains			2	2			22
Charlottesville	1						
Calmes Neck			4	3		5	6
Northern Shenandoah Valley	1						
Rappahannock			3	3	2	4	15
Waynesboro		1					
Giles County		2					
Total	2	4	17	8	2	9	43

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.

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