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Icon of Chesapeake Winter Still Graces the Bay

BY CHERYL LYN DYBAS
PHOTOS BY ILYA RASKIN

“They came back. This winter.” Biologist Donald Webster’s voice has a wistful note, wondering if the king of ducks, as the beautiful, crimson-headed canvasback is known, will return to rule Chesapeake Bay in future seasons.

Bundled in parka, gloves, and hat, Webster, waterfowl coordinator for the Maryland Department of Natural Resources, raises his binoculars near a seawall at the confluence of the Chesapeake and the Choptank River in Cambridge, Maryland. The overlook is a mecca for wintering canvasbacks and other ducks. Chesapeake Bay is the largest estuary in the United States and one of the most productive water bodies in the world, attracting myriad waterfowl species.

“Canvasbacks, the ducks everyone comes to see, are usually here in force by Christmas, sometimes by Thanksgiving,” Webster says. “They stay through early to mid-March, then they’re gone, heading north to nesting grounds.”

SKINS OF WATERFOWL

On this late January morning with calm winds and temperatures that hover just above freezing, the canvasbacks’ red heads stand out in quiet, winter-dark waters. The ducks glide near the seawall, where a dozen photographers jostle for the quintessential shot of an iconic Chesapeake species. “This place is known as the ‘wall of shame,’” laughs Webster, “because it’s almost too easy to get great canvasback pictures here.”

After the warm winter of 2015–2016 and its low numbers of canvasbacks, they’ve arrived in large flocks this season (2016–2017).

Chesapeake skies fill with migrating ducks—canvasbacks, buffleheads, greater and lesser scaup, and many others—from December through March. The bay is the Atlantic Coast’s most important waterfowl migration and wintering area. The Chesapeake and its 19 major tributaries offer refuge to 24 species of ducks as well as Canada geese, greater snow geese, and tundra swans.

“Long-term worsening of the bay’s water quality, however, and loss of habitat, especially the grasses so many of these birds depend upon, have contributed to declines in wintering waterfowl populations,” says Webster.

SEESAWING GRASS ESTIMATES

An estimated 97,433 acres (400 km²) of submerged aquatic vegetation (SAV) remained in the bay and its tributaries in 2016, down from historic levels that may have reached more than 600,000 acres (2,500 km²).

There’s good news, however, in the 2016 estimate. It’s an 8% increase over 2015, and more than twice the SAV in the bay in 2013.

In 2011, the Chesapeake’s SAV declined to 48,195 acres (195 km²), a result of the effects of Hurricane Irene and Tropical Storm Lee. The storms sent a flood of sediment cascading down rivers and into the bay. After 2011, conditions became relatively dry, reducing the flow of grass-smothering sand and mud. More sunlight reached submerged grasses, allowing them to rebound. In return, the SAV filtered runoff, helping keep Chesapeake waters clear.

Forty years ago, SAV reached what may be its lowest point in parts of the bay. Another major storm, Tropical Storm Agnes in 1972, nearly wiped out the SAV at Susquehanna Flats, an expansive bed of grasses where the Susquehanna River



widens into the Chesapeake. The rush of flood water from the roiling Susquehanna uprooted grasses at the Flats' edges and deposited sediment there, blocking sunlight and photosynthesis. Then the storms of 2011 exacerbated the damage.

But the grasses fought back. Their blades impeded the river's flow enough to prevent erosion of the beds' inner cores. "SAV modified its environment in ways that improved its growth," says biologist Cassie Gurbisz of St. Mary's College of Maryland. "That ability likely serves as a mechanism of SAV resilience."

The plants create clear water in the middle of the beds, which promotes their growth and improves water clarity. When clean water sluices out of an SAV bed's center into the surrounding bay, more light is available for the grasses to grow, allowing them to shoot up faster.

Gurbisz and colleagues published the results of a study of storm-related SAV loss and resilience in 2016 in the journal *Estuaries and Coasts*. Coauthors of the paper are Michael Kemp and Lawrence Sanford of the University of Maryland Center for Environmental Science, and Robert Orth of the Virginia Institute of Marine Science.

DUCK FEAST TO FAMINE

Over the bay's history, SAV has floundered and flourished. Canvasbacks have followed suit. As recently as 1950, half the continent's population of canvasbacks—more than a quarter million—wintered in the Chesapeake, relying on aquatic grasses as favored food sources.

During Colonial times, as many as one

million of the ducks may have spent wintertime on the bay. In the nineteenth century, their abundance and, to many, good taste, made them a favored selection in many East Coast restaurants, says Matt Kneisley, regional director for the Northeast Atlantic Flyway at the Delta Waterfowl Foundation, a waterfowl conservation and hunting organization.

Canvasbacks congregate in large flocks on open waters, leading to easy—too easy—harvesting. By the end of the nineteenth century, commercial hunters with batteries of weapons went after rafts of the ducks, often killing dozens with one shot. The "cans," as hunters call them, were shipped by boxcar to markets from Baltimore to Boston. Such market hunting was outlawed with the passage of the Migratory Bird Treaty Act of 1918.

"Canvasbacks were a favored quarry because their meat was considered the tastiest of all the ducks due to their consumption of wild celery," writes Guy Baldassarre in the 2014 edition of *Ducks, Geese and Swans of North America*.

Adds Kneisley, "Large beds of wild celery once attracted thousands of the ducks to Susquehanna Flats and elsewhere on the upper bay." Then a decline in the Chesapeake's water quality greatly reduced the amount of wild celery. Tropical Storm Agnes was the final blow. "After the storm, wild celery was virtually impossible for canvasbacks to find," says Kneisley.

The ducks switched their foraging efforts

to small clams on the Chesapeake's shallow bottom. But a less nutritious diet of shellfish such as Baltic clams may affect the ducks' winter survival rates.

A COMMON FUTURE

Annual January bird counts, Webster says, "give us a very good picture of how much declines in SAV have affected wintering waterfowl."

Half a century ago, four to five million ducks, geese, and swans spent time on Chesapeake Bay during the winter. Now, that number is less than one million, according to results from a midwinter waterfowl survey. The nationwide count has taken place every year since the 1950s.

Survey teams of biologists from the Maryland Department of Natural Resources and the US Fish and Wildlife Service fly transects to make visual estimates of waterfowl along the Chesapeake and the nearby Atlantic coast. In 2017, the teams counted 812,600 ducks, geese, and swans, higher than the 663,000 birds observed in 2016 and similar to the five-year average of 795,240, says Webster.

Estimates of canvasbacks in 2017 were 75,100; in 2016, 19,800; and in 2015, 64,200. Sixty years earlier, in 1955, 225,450 canvasbacks were sighted. The last time the canvasback count exceeded 100,000 was in 1967: 133,100.

Nonetheless, says Webster, "this is one of the best places on Earth to see waterfowl in winter and as they migrate in and out during fall and spring."

In a Currier and Ives view of Chesapeake Bay in winter, canvasbacks and other waterfowl species linger near a seawall in Cambridge, Maryland.



From afar, canvasbacks and redheads may be challenging to distinguish. Canvasbacks have black bills; redheads' bills are blue. Here, the lead duck is a redhead. The two following are canvasbacks. They're making their way along Chesapeake Bay to a spot near Cambridge, Maryland (pictured, previous pages).



ON THE FLY

Most birds in North America move with the seasons, but “perhaps because waterfowl are more visible than other species in migration, they epitomize this phenomenon,” wrote Frank Bellrose in the first edition of *Ducks, Geese and Swans of North America*, published in 1980.

Only a few waterfowl species, such as Florida ducks, are nonmigratory. In the southern parts of their ranges, wood ducks and hooded mergansers are resident throughout the year. Some groups of mallards, Canada geese, and common eiders migrate only short distances or not at all when conditions for staying put are favorable.

On the whole, however, waterfowl make “tremendously long migratory flights,” Bellrose wrote.

Lesser snow geese and pintails that breed in Siberia spend the winter in the Central Valley of California. Black brant that nest along Queen Maud Gulf in the Canadian Arctic migrate to Baja California. Pintails and American wigeons, most of which come from Alaska, regularly winter in the Hawaiian Islands.

Migrating waterfowl fly continuously unless forced to land by exhaustion or bad weather. Some species make non-stop flights as long as 4,800 kilometers. Most waterfowl migrate at speeds of 64 to 97 kilometers per hour. A flight of 3,200 kilometers at 80 kilometers per hour would take a duck about 40 hours.

“We humans can’t keep a plane in the air that long,” Webster says. “Waterfowl in migration perform quite a feat.”

Ducks fly at altitudes ranging from a meter above the ocean to more than six kilometers. The lowest migratory flights, according to Bellrose, are those of sea ducks like eiders.

Other species fly high enough to clear the peaks of the Rocky Mountains, some of which exceed 4.3 kilometers. In general, the longer the flight, the higher the altitude.

THE ULTIMATE MIGRATORS

Why do waterfowl migrate, and how do they find their way? Most ducks wouldn’t survive northern winters. The waters where they breed freeze over, making food impossible to find. However, they migrate as short a distance as possible to find open water and food.

If nature provides a nearby alternative, waterfowl are quick to notice. When hurricanes opened densely vegetated coastal marshes in Louisiana, for example, tens of thousands of ducks responded by wintering there rather than continuing across the Gulf of Mexico to the Yucatán Peninsula.

“In acquiring their navigational abilities,” Bellrose wrote, “each species of waterfowl has evolved different cues and degrees of dependence on them. Mallards that migrate short distances show a different use of sun and star cues than do blue-winged teal, for example, which migrate much farther.”

Waterfowl heavily depend on landscapes as they navigate across the continent, which works fine during daylight hours. But scientists have noted cases in which ducks flying at night have overshot their intended stopping points, only to

retrace their routes the next day.

Ducks also migrate across trackless regions with few clues. And they fly on nights so darkened by clouds that the places where land meets water are nearly invisible. Landscape alone, therefore, can’t be the only way in which waterfowl find their way south or north.

Although scientists don’t know all the answers, they believe that waterfowl and other birds have internal clocks enabling them to adjust to the changing position of the sun in the sky, and that the birds can follow star patterns to find direction.

Some species can navigate at night even within cloud layers, without reference to landscape or celestial clues. Evidence suggests that they use Earth’s magnetic field when other sources are unavailable.

Most waterfowl migrate along corridors, the well-known “flyways.” Four major routes pass through the United States: the Pacific Flyway, which runs north-south along the West Coast; the Mississippi Flyway, which leads from the bays of northern Canada and the Arctic to the Gulf of Mexico; the Central Flyway from northwestern Canada to Central America and the Yucatán Peninsula; and the Atlantic Flyway, which funnels waterfowl from central and eastern Canada along the Atlantic Coast to Florida. Chesapeake Bay is a major duck stop along the Atlantic flyway.

BIRD NURSERY

About half North America’s ducklings, including many of the Chesapeake’s wintering ducks, began life in the prairie



Waterfowl wintering on the Chesapeake depend on submerged aquatic vegetation such as wild celery. When that's not available, some species turn to shellfish like Baltic clams. Clockwise from upper left: Lesser scaup; mallards and American wigeon; canvasbacks; American wigeon; mixed flock of canvasbacks and lesser scaup; and a lone redhead.

pothole region, an area that extends from the Midwest into Canada.

As the ice sheets of the last glacial period retreated northward, tens of thousands of landlocked icebergs were left in their wakes, writes Michael Furtman in *On the Wings of a North Wind: The Waterfowl and Wetlands of North America's Inland Flyways*.

As these icebergs melted, Furtman states, "they became the foundation of the prairie potholes. An estimated 10 million glacially carved depressions once pockmarked the landscape of the prairie pothole region of the United States and Canada." The potholes evolved into a habitat so enticing that more than 130 bird species have used a single pothole.

Ducks were likely among the first residents. With millions of potholes from which to choose, waterfowl had plenty of room to find nesting sites.

"The diversity of potholes, ranging from small spring ponds to large permanent wetlands, provided ducks with the various

habitats necessary for each specific stage in their breeding and brood-rearing cycles," Furtman states.

As the glaciated land gave way to farmland, however, the number of potholes decreased, especially over the last 40 years. In North Dakota's pothole region, where as many as 100 wetland basins per 2.5 km² once existed, "60 percent of the original 5 million acres [20,000 km²] of wetlands have been lost," Furtman reports. "Ninety-five percent of that loss is attributable to agriculture."

IS PAST PROLOGUE?

If agriculture isn't challenge enough for waterfowl during their nesting seasons, rising global temperatures may result in more frequent and severe droughts in the

prairie pothole region, with a devastating effect on breeding ducks.

Webster has witnessed the result.

"Decades ago," he says, "the Chesapeake was full of wintering canvasbacks. But no more. I'd like to see the days again when their dark red heads stretched as far as you could see."

Canvasbacks and the many other ducks that winter on the bay have come a long way to get there, Webster says. "The least we can do is show them some hospitality by making sure their environment is healthy."

Otherwise, he says, the Chesapeake's winter waterfowl spectacle may vanish, the seawall along the Choptank indeed becoming a wall of shame as the last canvasbacks' wingbeats fade into silence.

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