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**Black Vultures,
Burning for Wildlife,
Fly-Fishing**



BLACK

VULTURE

by
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& David Barber**

Black vultures, an uncommon sight in Massachusetts compared to the familiar turkey vultures, have been seen in ever-increasing numbers over the past decade. Last summer, as part of a larger range study of this species, researchers from Pennsylvania trekked to Massachusetts to attach a tracking device to a young black vulture at a recently discovered nest. Read on to find out what scientists have been learning about this carrion-consuming species' habits and movements north into New England.

Vultures have suffered from poor public relations since Charles Darwin described them as “disgusting birds” meant to “revel in putridity.” With most vulture encounters occurring along roadsides accompanied by rotting carrion and wafts of decay, many people are quite happy to keep their distance. But people and vultures are often found occupying the same space, so it makes sense to get to know them as neighbors.

Hawk Mountain Sanctuary, based in Pennsylvania, is a conservation non-profit focused on the conservation of raptors worldwide and the oldest raptor migration watch site in the world. We have been studying the movements of Pennsylvania's black vultures (*Coragyps atratus*) for over a decade. In this article, we will cover black vulture natural history, the sanctuary's research on range expansion, and its mission to better understand nature's essential workers.

Black vultures are scavengers, and most of their diet comes from carrion left behind by other animals. In landscapes unoccupied by people, vultures would take advantage of predators' kill scraps, key in on natural animal die-offs due to sickness and the elements, or arrive in time for annual feeding events, such as birthing or sea turtle mass egg-laying.

Today, these adept scavengers live in a human-dominated landscape where roads, landfills, and agriculture provide an excess of feeding opportunities. As a result, the black vulture population has seen a steady increase and northward range expansion. Black vultures' innate curiosity for exploring potential food resources, complex information-sharing at communal roosts, and ability to recognize indicators of potential meals give them a flexible foraging approach that is built from experience and the skills to become established in a wide range of habitats. But since they are often overlooked by researchers, birders, and members of the public, there remains a lot to be discovered about the specifics of the black vulture's success on the East Coast.

Range

Black vultures are the most numerous of the vulture species in the Western Hemisphere. With their densest concentrations along the equatorial regions of Central and South America, their range runs north through Mexico into the southern U.S. In the U.S., while there are historical records that place black vultures in the upper Mississippi, their densest populations are found in the southeastern region along the Gulf Coast, Florida, and up into the Carolinas. Black vultures have been steadily expanding their range north along the eastern seaboard, with the population occupying southeastern Pennsylvania around Hawk Mountain Sanctuary in the 1980s. Today they are found north into New England and up the shoreline of Lake Champlain into Canada.

The first documented black vulture in Massachusetts was shot in Swampscott in 1850 and the second record was from 1863. For over a century, the black vulture was considered an accidental straggler in the state, although, more recently, regular sightings have been documented. However, during the first Massachusetts Breeding Bird Atlas, 1974–1979, no evidence of breeding or nesting was found.

Locating black vulture nests is challenging. These birds are secretive, preferring to nest on rock- and boulder-strewn talus slopes and outcrop areas that are very difficult for people to traverse. It wasn't until 1998 that the first black vulture nest was found on a rock ledge in the Blue Hills near Boston. A nestling successfully fledged that summer. The second Breeding Bird Atlas (2007–2011) identified 12 atlas blocks with probable or possible nesting activity. According to Mass Audubon's website, "black vultures are still uncommon in most of the state, but there are areas in western Massachusetts where black vultures are routinely seen—and may well be breeding."

What is the cause of this range expansion? Some believe it is due to an increase in food availability because of increases in roadkill, while others have suggested it is a result of warmer temperatures due to global climate change. Or is the species simply reclaiming the historical range they were extirpated from in the early 1900s? A large gap in our knowledge is whether the behavior or movement of individuals at the edge of the range expansion differs from those at the core of the range and allows them to expand their range. Despite the black vulture's movements and increasing range expansion, they are considered a non-migratory species, meaning the population does not

show seasonal shifts in occupied territory. However, hawk watchers along the northern range count black vultures that appear to be migrating, and the number of vultures in communal roosts increases dramatically during the winter months as far south as the Delmarva Peninsula. So where are these black vultures coming from? Is it the birds at the edge of the range expansion that are migrating? Is the movement ecology of black vultures at the edge of their range expansion different from that of those further south? And what are the consequences of this range expansion?

Behavior

To understand how vultures may expand their range and the impacts of this expansion, it is helpful to understand black vulture social structure. These are intelligent, long-lived scavenging birds equipped to take advantage of small-to-large pieces of carrion, typically rotting animal remains. They are a highly social species, roosting together in communal roosts that range from a few individuals to several hundred. Young birds may stay with their parents for more than six months. A well-fed black vulture spends a lot of time at the roost site interacting with others in the flock, bathing, and loafing while waiting for thermals to develop. Black vultures lack a keen sense of smell, so, when seeking food, they often

The highly social nature of black vultures can lead to human-vulture conflicts when flocks, called committees, habituate to human-provided food sources and select homes as communal roost sites.

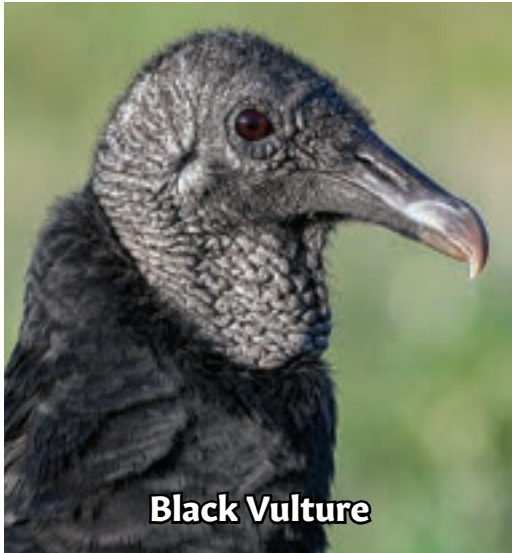


Photo © Tom Buehl Jr.

Vulture Identification

Black vultures are one of the seven species of New World vultures, three of which can be found in North America, the black vulture, turkey vulture, and California condor. Black vultures are easy to differentiate from their cousins given their jet-black plumage, slender bill, blackish gray heads, and short tails. When in flight they reveal white undersides to their outer flight feathers, giving the appearance of white hands on their wings. They fly with a very flat profile and steady flight interrupted periodically by brief bouts of rapid flapping. These characteristics make them easy to tell apart from the red-headed, dark-brown bodied, long-tailed turkey vultures, who hold their wings in a dihedral (upward V-shape) and can be seen in teetering flight over the countryside showing the long silvery lining to the undersides of their wings.

Photo © Miri Hardy, MiriInTheWild.com



Black Vulture



Inset Photos © Bracken Brown

Photo © Bill Moses

Photo © Miri Hardy, MiriInTheWild.com



Turkey Vulture



Photo © Bill Moses

fly higher than turkey vultures and follow them to a food source. Black vultures are more aggressive at a feeding site and will dominate turkey vultures if they outnumber them. Black vultures don't forage at random. They incorporate reliable food sources into favorite stop lists and will frequently revisit the same sites. Grouped carcasses at highway department roadkill dump sites, agricultural carcass dumps, and landfills provide a network of reliable feeding stations that can support massive vulture flocks. Vultures aren't interested in expending unnecessary energy, so they often roost close to these locations. This results in large flocks—or committees—of vultures that spend a significant amount of time in a localized area.

Most black vulture roost sites have several features in common: large, mature trees in an open canopy that allows easy entry and exit, water nearby so the birds can drink and bathe, and close access to reliable thermal updrafts to assist with

flight. Vultures are also very comfortable using manmade structures instead of natural trees if they provide better options. In fact, people exhibit similar preferences for their home “roosts.” When choosing a home, some people prefer to congregate near water, plant tall conifer wind breaks near buildings, and choose geographic regions like hills, cliffs, or mountains, which provide plenty of thermal lift. These human home choices sometimes act as unintentional invitations for black vultures to set up their roosts on roofs or nearby trees in our backyards. Cell towers and large billboard signs provide excellent elevated positions that roosting vultures can easily use.

Tagging Tekoa

We have been studying the movement ecology of Pennsylvania black vultures since 2010 using both wing tags and satellite telemetry. We count an average of 135 migrating black vultures each autumn. To date, data from our tagged black vultures support the non-migratory designation of the species. Individual birds tend to occupy relatively small home ranges that include several communal roosts and the area surrounding them. Most individuals have a restricted wintering area often focused near the core of their home range. Individuals would make occasional flights outside the home range that could cover 50–100 miles but then usually return to the home roost.

To determine if the movement behavior of Pennsylvania black vultures differs from that of those at the edge of their range, and to determine if the latter are the vultures we are counting each autumn, we needed to tag birds in New England where their range is expanding. In 2021, we reached out to the MassBird listserv to ask if anyone knew of any black



Tekoa #394

(Left to right) Jesse Caney, Tom French, and David Barber with Tekoa, a black vulture nestling they tagged last summer at Mount Tekoa in Russell. Tekoa now wears a yellow patagial tag (#394) to aid in visual identification of the bird by the public and a satellite transmitter that gathers GPS data on the bird's location.



Photos courtesy Hawk Mountain Sanctuary

vulture nest locations. Tom French, former assistant director of MassWildlife's Natural Heritage and Endangered Species Program, had recently observed a black vulture flying behind a boulder on a cliff while banding peregrine falcons on Mount Tekoa in Russell. A 45-foot rappel down to the presumed nest site resulted in confirmation of an active black vulture nest with one nestling.

On July 9, 2021, we drove to Massachusetts to meet Tom and MassWildlife volunteer climber Jesse Caney to attach a satellite transmitter to the nestling. After Jesse retrieved the nestling, which we named Tekoa, we attached a yellow patagial tag, very similar to a cattle ear tag, to the front of the wing. The unique and large three-digit number (394) allows members of the public to report

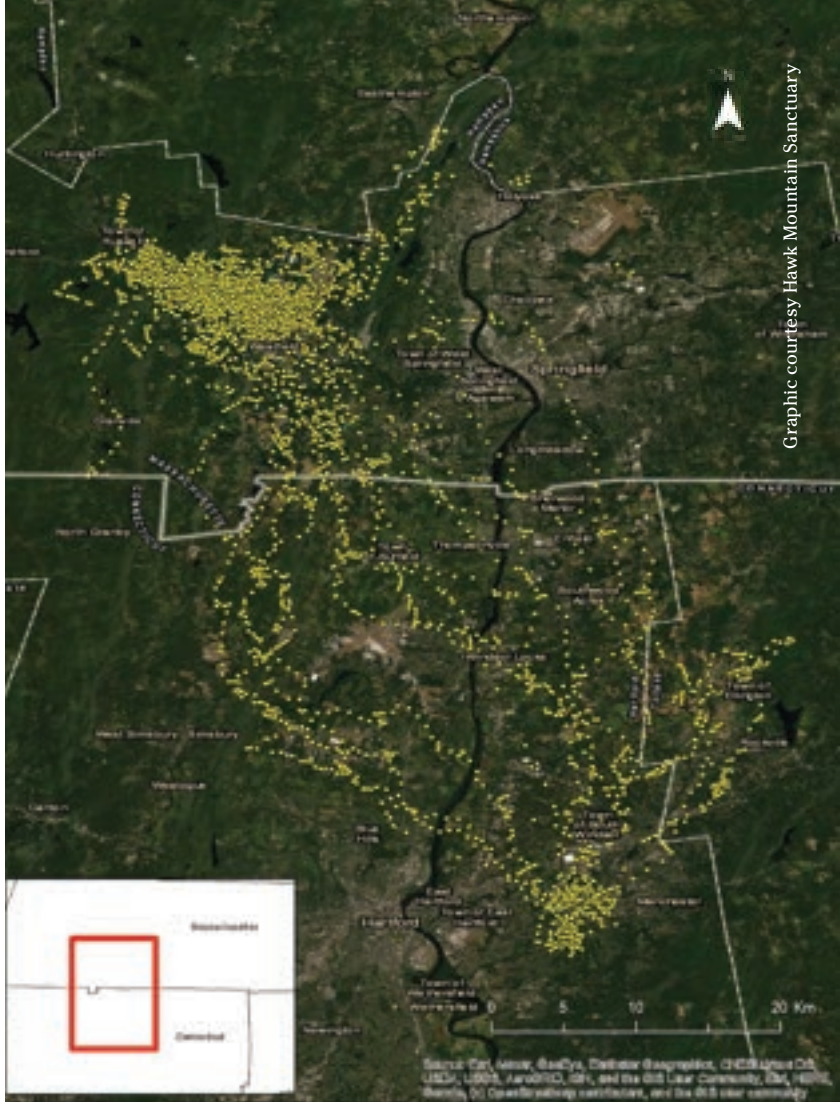
the bird's location if they see it. We also attached a GPS/GSM satellite transmitter that collects GPS data up to every two minutes and allows for fine-scale tracking of the animal. The transmitter weighs 30 grams, less than 3% of the bird's body weight, as required by the U.S. Bird Banding Lab. The transmitter is attached to a backpack-style harness that was put on the bird. This carefully designed equipment does not affect the bird's behavior.

Tekoa fledged from the cliff nest on the morning of August 1, venturing more than half a mile from the nest site before making its way back to the cliff face in early afternoon. Tekoa spent its first month after fledging mostly north of Westfield, never venturing further than 4.5 miles from the nest. During that first month

we noticed several areas with concentrations of daily locations. When we zoomed in, it was apparent that Tekoa was repeatedly visiting several recycling centers, presumably following its parents, and learning about local food sources.

Since August, Tekoa has made short-distance movements to Connecticut, repeatedly visiting an open-air pig operation west of Manchester, traveling up to 62 miles per day and soaring as high as 4,300 feet. If we drew a polygon around Tekoa's 16,000 recorded locations through November 22, the total area, or its home range, would cover an astounding 542 square miles. Tekoa hasn't undertaken any migratory movements yet, but the lack of significantly cold temperatures or

snow cover in New England may be allowing the young vulture to find a steady supply of food. On the other hand, if it continues to visit reliable human-provided "feeding stations," Tekoa may not need to migrate. Regardless, it will be exciting to follow Tekoa's movements as winter approaches and see if the vulture decides to migrate south. You can follow Tekoa's whereabouts through weekly updates on Facebook, search for Black Vulture Project.



Graphic courtesy Hawk Mountain Sanctuary

This graphic depicts Tekoa's 16,000 recorded GPS locations in Massachusetts and Connecticut from July 9–November 22, 2021, a total area, or home range, of 542 square miles.

Growing Pains

It is clear from their increasing population and expanding range that black vultures are highly successful and can take advantage of predictable human food-source patterns. This allows them to thrive in highly fragmented landscapes that many animals find challenging. However, it isn't all positive. Their rapid range expansion and comfort around people is drawing unwanted attention as flocks of black vultures suddenly move into

A tagged and untagged black vulture feed on a road-killed gray squirrel. The public can assist Hawk Mountain Sanctuary and its partners by reporting the three digit numbers on these yellow patagial tags. Such location data is critical to understanding this species' northward expansion.



Photo © Bracken Brown

residential neighborhoods, using human structures as nest or roost sites. This comfort level (habituation) often results in complaints from residents expressing concern about the large, bold birds that investigate backyard activities and line up with pets to be fed on back porches. Unfortunately, this typically ends with the removal of the birds to eliminate the perceived problematic population. Removal is only a stopgap measure if the attractants that brought vultures to the area remain in place, attracting the next inquisitive group. Understanding how vultures use their environments and how humans can influence this use is critical in alleviating human/vulture conflicts, particularly at the edge of the species' range expansion. Hawk Mountain Sanctuary recently created two pamphlets on black vultures, explaining their critical role in the environment and how to mitigate human/vulture conflicts. These documents and more information on black vultures and conservation of raptors are available at the Hawk Mountain Sanctuary webpage at hawkmountain.org, search for New World Vulture Project.

Hopefully Tekoa's movements will shed some light on how black vultures are able to adapt and expand into a human-dominated landscape and if vultures at the edge of their range are really the birds that are counted each autumn at hawk-watch sites along the East Coast. The story will not end with Tekoa, however, as we have another satellite transmitter that we plan to deploy in the spring/summer of 2022. If you know of a black vulture nest site or if you would like to donate towards the deployment of a transmitter in your area, we encourage you to contact us at barber@hawkmountain.org or brackenbrown@hawkmountain.org.



About the Authors

Bracken Brown is the Biologist/Naturalist and David Barber is the Senior Research Biologist at Hawk Mountain Sanctuary Association, a non-profit conservation organization dedicated to preserving birds of prey worldwide. They would like to thank Tom French and Jesse Caney for their invaluable help in the field.