

### Virtual Creature Festival: Turkey Vulture

Determine why turkey vultures are important for the ecosystem, how their adaptations benefit their survival, and the impact that climate change can have on their populations.

Have you ever looked up while you were outside to find a few large birds circling around in the sky? If so, you have most likely witnessed vultures looking for food. In the Eastern United States, we have two different species of vultures – the turkey vulture and the black vulture. The turkey vulture (*Cathartes aura*) is a fascinating creature with many interesting adaptations and ways of life.



Turkey vultures are *scavengers*, which means that they roam around looking for *carrion* to eat. Carrion is dead or decaying flesh, which is why you will often see vultures on the side of the road snacking on roadkill. They mainly eat dead mammals but will also feed on dead reptiles, amphibians, birds, or fish. Carrion makes up a vulture's full diet, but how do they stay healthy after consuming animal carcasses?

**Think and Respond:** How is it possible for vultures to remain healthy after eating carrion? If you are not sure, list some of your ideas and your reasons. **Respond before you continue.**

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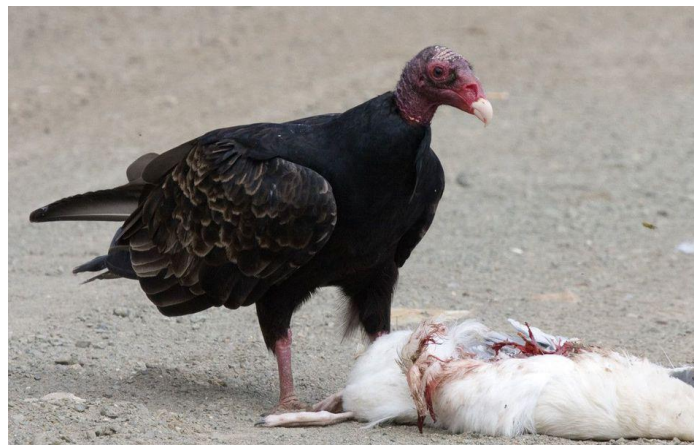
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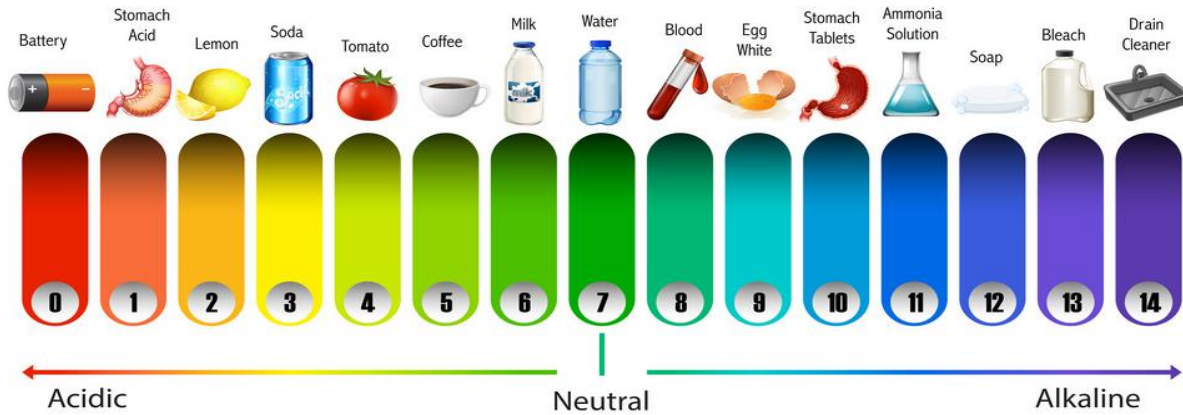
Source: [Newsweek](#)



Source: [Smithsonian Magazine](#)

The stomach of a vulture has the lowest pH of any creature known to humankind, and it 10 to 100x more acidic than human stomach acid. Because their stomachs are *so* acidic, it helps to kill any harmful bacteria from the carrion. Human stomach acid can lay anywhere from 1 to 3 on the pH scale, but a turkey vultures stomach acid has the pH of about 0. View the pH scale below for more examples of acidity vs. alkalinity.

# The pH Scale



The pH scale is a 14-pt scale that measures the acidity or alkalinity of an item.



Source: [All About Birds](#)



Source: [All About Birds](#)

Turkey vultures are so important for the ecosystem because they are part of the natural recycling process and keep areas free of carrion. They help to clean up dead animals, keeping our roads clean. They also eliminate bacteria that can get passed on to other animals – these bacteria has the potential to come into contact with roadkill and also humans. For example, if there were no vultures there would be a very large amount of roadkill and dead animals all around. This gives little critters, like mice and squirrels, a higher chance of coming in contact with those dead animals that can easily spread bacteria and disease. Now that those smaller animals have been infected if they encounter humans or other animals, the cycle of bacteria and disease may continue through the chain of contact and the food chain.

The next time you see vultures be sure to thank them for doing their part in keeping the Earth clean and safe!

One way to easily identify a turkey vulture is by their bald, red head, which is an interesting adaptation. Can you think of any reason why a vulture would benefit from their head being bald, or featherless?

**Think and Respond:** *Why do you think turkey vultures have adapted to have a bald head?*  
**Respond before you continue.**

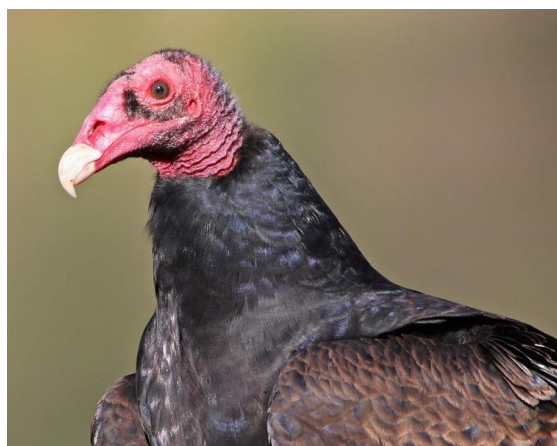
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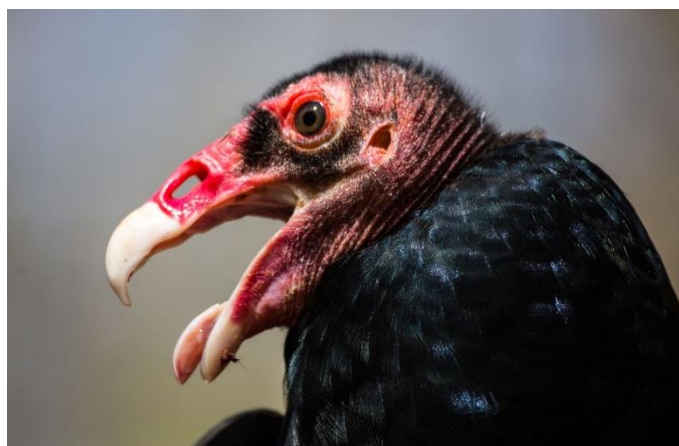
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Source: [Smithsonian Magazine](#)



Source: [Reconnect with Nature](#)

Turkey vultures benefit from a bald head because it keeps them as clean as possible when they eat. If they had feathers on their heads, they would potentially be covered in carrion and their feathers would probably get matted together. Not only would this be uncomfortable, it would attract flies and other organisms, be unsanitary, and leave the vultures full of bacteria. Having a bald head also helps to keep them nice and cool in hot weather.



What else makes turkey vultures unique?

**1. They are one of the only birds in North America with a good sense of smell!**

Turkey vultures have a keen sense of eyesight and smell so when looking for food, they have two senses they can use. Black vultures on the other hand, (the other native vulture in the Eastern United States) have a very poor sense of smell, so they search for food by following turkey vultures to the food source.

**2. They are defense vomitters.**

Yep, this is exactly what it sounds like! If a turkey vulture feels unsafe or is being aggressively approached by another animal, it will vomit to defend itself and drive the other animal away. They can vomit up to 10 feet!

**3. They poop on themselves.**

As if turkey vultures *couldn't* get any more interesting... they poop on their own legs, for two important reasons. The first reason is to keep themselves cool, in the same manner that their bald heads area cooling mechanism. The second reason is that the uric acid found in their droppings acts as an antiseptic and will clean the bacteria from their legs. The bacteria can be acquired as the turkey vulture steps on the dead animal's body.

**4. They can glide for hours without flapping their wings.**

Turkey vultures glide with wind currents; they can soar through the air without flapping their wings.

**5. They are always around for us to observe.**

Especially in New Jersey, turkey vultures can be observed all year long as they soar using thermals. They are often seen in groups called kettles. They have a distinctive teetering movement as they soar with their wings slightly raised. Next time you are at Duke Farms, remember to keep looking up and you are almost guaranteed to see a turkey vulture. The Duke Farms Birding Platform is also a great place to spot turkey vultures, and birds of all kinds.



## Additional Resources

[The National Audubon Society](#) is an excellent resource for all things birds, including what turkey vultures sound like while feeding or in a nest.

**Songs and calls of a turkey vulture** – Click on the link to hear their unusual vocalizations.

Usually silent, but they will hiss or grunt when feeding or at nest. Listen [here](#) and [here](#).

*Audio © Lang Elliott, Bob McGuire, Kevin Colver, Martyn Stewart and others.*

## Climate Change

The link from Audubon also provides a clear picture of how climate change will impact turkey vultures.

*How Climate Change Will Reshape the Range of the Turkey Vulture:* Audubon scientists have used 140 million bird observations and sophisticated climate models to project how climate change will affect this bird's range in the future. Using this interactive model, you can Zoom in to see how the turkey vulture's range will shift, expand, and contract under increased global temperatures. Using this component, participants may select the temperatures of +1.5 °C or +3.0 °C to see which threats will occur at these temperatures. The same climate change driven threats will also put people and wildlife at risk, in some circumstances.

For the turkey vulture the risks are:

- Fire weather - Wildfires incinerate habitat, and if they burn repeatedly, prevent recovery
- Spring heat waves - Spring heat waves endanger young birds in the nest.
- Urbanization - Cities demolish bird habitat and are often located in the places birds need.

## A Creative Activity to Demonstrate Animal Adaptations:

### Activity 1: Your Animal Adaptations

For this activity you will get to create and build your own animal with its own adaptations.

You can draw or physically build your animal with crafting materials.

You can use any materials that follow and anything else you can think of:

- Paper
- Crayons/markers
- Popsicle sticks
- Paint
- Feathers
- String
- Pompoms
- Cotton balls
- Pipe cleaners

You will also need to think about what your animal will look like and why. Including but not limited to:

- Does it have fur or scales or feathers? Why?
- Where and when does it sleep? Why?
- What color is it? Is it multi-colored?
- How big is it?
- What does it eat?
- How does it deflect predators?

Be sure to give your creation a common and scientific name and assign it some noteworthy adaptations like the turkey vulture has!



### **New Jersey Student Learning Standards:**

This lesson could be used in third grade, and others, when addressing heredity and the inheritance of traits.

**3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

**3-LS3-2.** Use evidence to support the explanation that traits can be influenced by the environment.

Disciplinary Core Ideas LS3.A: Inheritance of Traits ♣ Many characteristics of organisms are inherited from their parents. (3-LS3-1) ♣ Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2) LS3.B: Variation of Traits ♣ Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1) ♣ The environment also affects the traits that an organism develops. (3-LS3-2)

**Climate Change can impact the health and well-being of turkey vultures. For more information about how to apply this lesson to the New Jersey's new climate change curriculum for all public schools, contact Kate Reilly, Manager of Education, Duke Farms at [kreilly@dukefarms.org](mailto:kreilly@dukefarms.org)**

### **Adopted 2020 New Jersey Student Learning Standards (NJSLS)**

New Jersey is the first state in the country to require climate change curriculum across all content areas and at a K-12 level. As stated by the NJDOE:

On June 3, 2020, the State Board of Education adopted the 2020 NJSLS in the following content areas:

- Career Readiness, Life Literacies, and Key Skills;
- Comprehensive Health and Physical Education;
- Computer Science & Design Thinking;
- Science;
- Social Studies;
- Visual and Performing Arts;
- and World Languages.

These standards truly represent a foundation from which districts will build coherent curriculum and instruction that prepares each New Jersey student with the knowledge and skills to succeed in our rapidly changing world. They will put New Jersey again at the forefront of national education by including the following:

- Climate Change across all content areas, leveraging the passion students have shown for this critical issue and providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.