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# NATURE'S NEWSLETTER

ONLINE EDITION



WILDLIFE AND THE ENVIRONMENT





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Left Top	© Kathleen Colligan, Photographer
Left Bottom	© Jill Terese Wussow, Photographer
Right Top	© Jill Terese Wussow, Photographer
Right Bottom	© Bryan D. Watts, Ph.D., Photographer

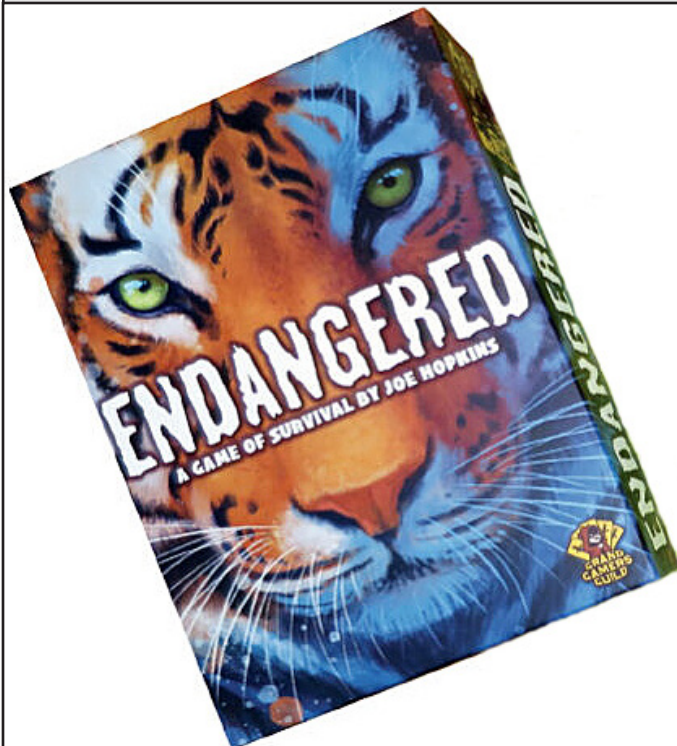
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## DISCOVERING NATURE



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### Endangered: A New Board Game

**by Sarah Zielinski**  
*Managing Editor of Science News for Students*

Saving endangered species isn't easy. Doing so requires the cooperation of many people — from scientists and conservation organizations to governments and local residents — as well as a bit of luck. That's as true in real life as it is in **Endangered**, a new board game from Grand Gamers Guild.

Endangered is a cooperative game for one to five players. Each person takes on a role — zoologist, philanthropist, lobbyist, environmental lawyer or TV wildlife show host — and players work together to convince at least four ambassadors to save a species. (In a one-player game, two roles are played simultaneously.) If you get too few "yes" votes, or let habitat destruction spread too much, or if your animal population dies out, everyone loses.

The game starts with a set of animals in their habitat, either tigers or sea otters, depending on which of the game's two story lines you play. Each player's turn consists of a series of phases. In the first, a player takes actions, such as moving animals to let them mate or obtaining money.

In the offspring phase, animal reproduction is controlled by the role of a die. The die also controls where habitation destruction — either deforestation or pollution — spreads. A card draw then brings on other events, from clear-cutting

**continued on page 22**



© Bryan D. Watts, Photographer

*A dipper foraging in a clear mountain stream in the Black Hills. They live life on the edge. Feeding on aquatic larvae, they push their way through the fastest water, dodging and weaving and doing their own thing. Everyone else is left on dry land to stand and watch the spectacle.*

# THE JOY OF BIRDS

by Bryan D. Watts, Ph.D.

Mitchell A. Byrd Professor of Conservation Biology / Director, Center for Conservation Biology  
College of William & Mary / Virginia Commonwealth University

Many of us feel the constant gravitational pull of wild places or wild things. Each of us have reasons that are our own. Maybe we want to wash away the human taint in emptiness and silence like the dipper is purified by a mountain stream – a return to innocence where we can receive the sacraments of healing from nature. Maybe we want to walk alongside the eternal – the comfort of knowing that the swallows will still ride the wind and the heron stalking in the shallows will still cast shadows on green water long after our time has passed. Whatever the reason, the wild is always welcoming.

So far, 2020 has been a tortuous year for the global community. We have been on a collective march along the narrow ledge of a canyon that has tested our humanity. Possibly the most difficult part of the pandemic has been the crushing uncertainty. How do we make individual decisions that respect and support our community? How do we heal together during a time when so many wounds have emerged?



© Bryan D. Watts, Photographer

*A female anhinga stands in the sun to dry her feathers. Watching these birds swim after fish with such speed and agility is a marvel.*

**continued on page 4**



## THE JOY OF BIRDS



© Bryan D. Watts, Photographer

*A Grace's warbler comes down to a spring in Utah for a drink. There are few things more worthy of time than to spend a morning watching the parade of thirsty birds come down for a visit. .*

As they often do, birds provide a respite from the cares of the day. They are not only wild, they bring wildness to us. We may engage with them in dramatic places during a once-in-a-lifetime experience or watch them every day from our window. We may sit with them for hours and contemplate their endlessly fascinating behaviors or observe them for mere seconds. What matters is that we are truly present with them in the moment. There is something about these simple encounters that provide perspectives on our own lives. Robert Bly captures part of this in his prose poem, "What have I ever lost by dying? – like the black ducks that fly desolate, forlorn, and joyful over the seething swells, who never feel pity for themselves, and do not lie awake weeping for their sins."

During times of crisis I have only to glance up to a collection of binoculars sitting on my shelf. Just the sight of them brings to mind thousands of days spent in the field with birds. A bric-a-brac of memories that would make even the most jaded, hawk-watch burnouts stand up at attention. But they represent more than a collection of memories.

The great artist Henri Matisse had a fascination with artistic lineages and discussed the dual importance of current



### ABOUT THE CENTER FOR CONSERVATION BIOLOGY

CCB is a research unit shared by William & Mary and Virginia Commonwealth University. The Center is a part of the VCU Rice Rivers Center. Rice Center scientists conduct cutting-edge environmental research on the James River and around the world.

CCB's mission is to provide the global community with the information needed to drive thoughtful, science-based conservation, to educate and train the next generation of conservation scientists, and to make lasting contributions to the natural world through critical thinking, innovation, and ground-breaking research.

<https://ccbbirds.org/>

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## THE JOY OF BIRDS

The binoculars hold more than my memories. Among them is the pair of Leicas that Mitchell Byrd bought at a duty-free shop in Amsterdam in 1971 while returning from an ornithological conference. I used them in the field for 10 years after he used them in the field for 20 years working with eagles, osprey and peregrines. There is the pair of Leicas that Dot Silsby used for 15 years while she tallied hawks during fall migrations at Kiptopeke. She presented them to me unexpectedly after I gave a lecture on raptor conservation – like the old country music tradition of passing along a guitar. I used them in the field for more than a decade working birds throughout the Western Hemisphere. We can easily be humbled by the thoughtful kindness of others.

**During times like today, when such stark divisions seem to hold us all hostage, it is maybe more important than ever that we all reach out to touch our common humanity.**

**Spending time with birds is a start...**



© **TOP:** Bryan D. Watts, Photographer **BOTTOM:** Bart Paxton, Photographer

**TOP:** Old friends that are at home on my bookshelf. **BOTTOM:** Bryan Watts, Maxi Galmes and Manu Grande work up a chaco eagle in the calden forest of Argentina. The chaco is one of the most endangered raptors in the world. Working together with common purpose to achieve conservation goals transcends the passing issues of the day.





## PHOTOGRAPHING BIRDS

by Kathleen Colligan  
*Birder and Photographer*

A retired middle school science teacher from NE Pennsylvania, I joined a birding club several years ago. Initially, I used my binoculars exclusively to observe the diversity of bird species all around me in the Upper Delaware River region.

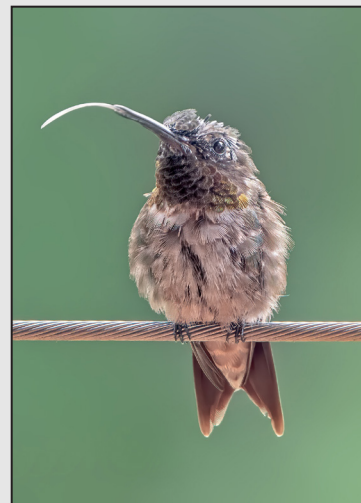
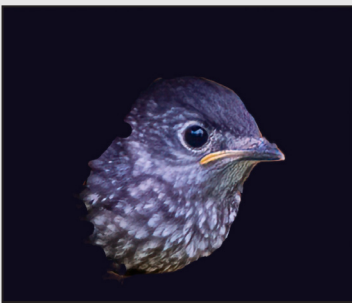
But now, a camera has replaced my binoculars leading to my newest hobby - photography. Birds are my favorite subjects but I also enjoy all kinds of nature photography.

This past year Covid 19 has limited my traveling. With my camera in hand, my daily nature walks have been extremely beneficial during these stressful times. I have been able to observe several nests in our area and then the new youngsters.

Two eaglets were in a nest along the Delaware River and eventually fledged. I feel so fortunate to have been able to continue to observe them as they remained together in our area throughout the summer months. There is a mulberry tree along a road by me that I spent a lot of time watching. All kinds of birds came to eat the berries. One was a bird that I had never seen before, a Louisiana Warbler. Cedar Waxwings and Baltimore Orioles also loved these berries.

I have always enjoyed watching my hummingbird feeders, but this year I had more time to watch them. During early spring, a cardinal pair came to my feeder, sharing food. Several weeks later their adorable juvenile cardinal came to the feeder as well.

To see photos and videos by Kathleen Colligan go to:  
*Instagram (@katomlizz)*



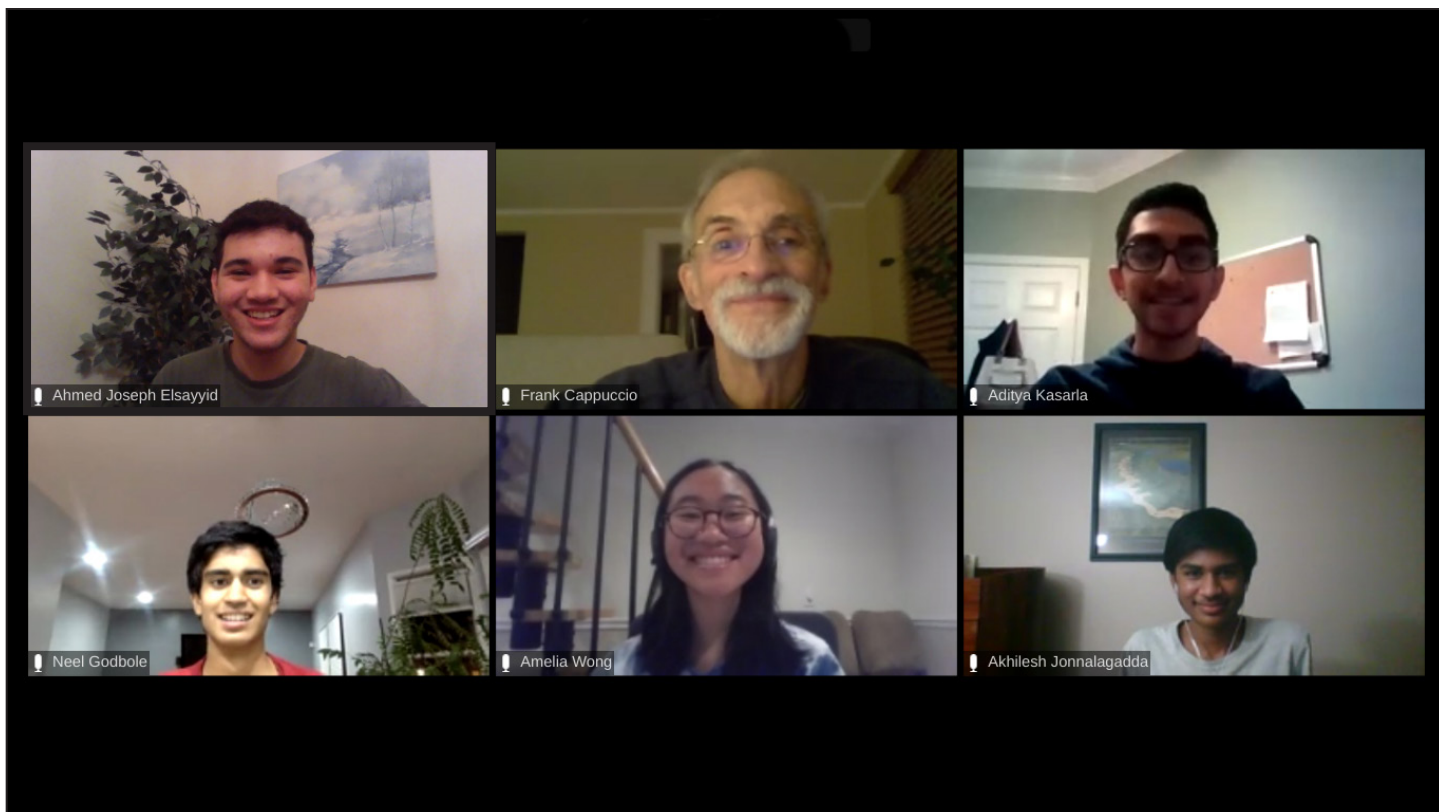
**LEFT (Top to Bottom):** Cedar waxwing; Cardinal feeding chick; Juvenile cardinal; Bluebird chick .

**CENTER (Top to Bottom):** Bald eagle fledglings; Bluebird pair.

**RIGHT (Top to bottom):** Baltimore oriole; Louisiana waterthrush; Hummingbird with tongue out; Hummingbird.

© Kathleen Colligan, Photographer





© Screen Shot Provided by Morris Hills Environmental Action Club

**CONTRIBUTING CLUB MEMBERS - TOP (Left to Right):** Ahmed Joseph Elsayyid; Frank Cappuccio; Aditya Kasarla.  
**BOTTOM (Left to Right):** Neel Godbole; Amelia Wong; Akhilesh Jonnalagadda.

# THE OCEAN IS GOING TO BURP

## Here's Why You Should Care!

by Morris Hills Environmental Action Club  
 Morris Hills High School, NJ

If you are a fan of soda or sparkling water, you know the feeling when you have taken too many gulps of that favorite beverage. Bubbly sensations fill your stomach and you feel something begin to rise to your throat. It all culminates in a loud release of gas that will perhaps draw the disgust of those around you. You burp.

But why? Why do these carbonated drinks elicit such ungraceful reactions by our bodies? The answer lies in their name: *carbon*-ated drinks.

Carbonated drinks contain dissolved carbon dioxide ( $\text{CO}_2$ ), giving it its characteristic fizz. Cold water is better at dissolving that  $\text{CO}_2$  than warm water. When you take a sip of your favorite fizzy drink, it heats up in your body, causing the gas to escape and exit through your mouth, resulting in a burp.

Climate scientists are not too worried about the carbon released by human burping. But what if it was not a

human body burping, but a far larger body, perhaps even expanding across 139 million square miles? What if it was the ocean?

### Saturation Is the Game

For billions of years, the world's oceans have been acting as massive carbon sinks, absorbing gigatons of  $\text{CO}_2$ .

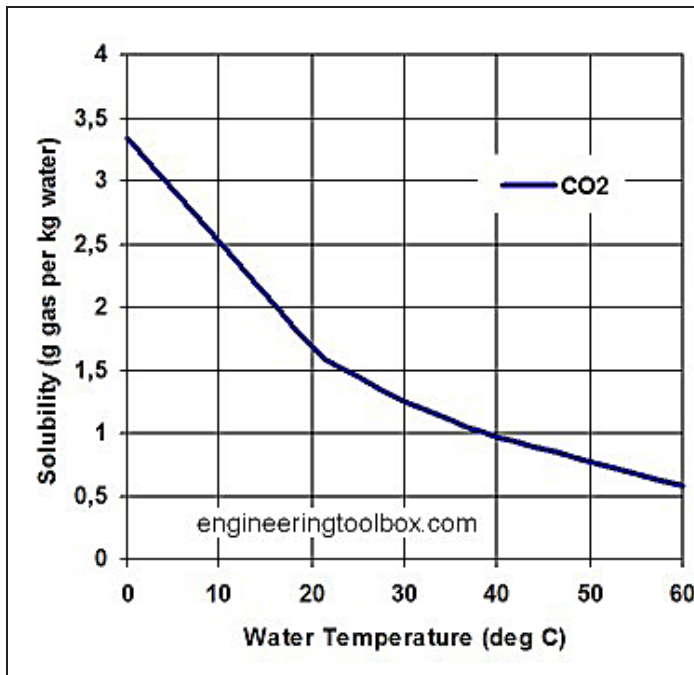
But wait: If the ocean's temperature is cold, how is it so good at dissolving  $\text{CO}_2$ ? After all, it is easier to stir sugar in coffee that is boiling hot rather than freezing cold, right?

While that logic may be true for *solid* substances like sugar, *gases* work differently. Although the solubility of water (its ability to dissolve substances) typically increases as its temperature rises, the opposite is true with regards to carbon dioxide. Scientists use a "saturation curve" to show the relationship between temperature and solubility.

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## THE OCEAN IS GOING TO BURP Here's Why You Should Care!



**LEFT:** © Engineering Tool Box **RIGHT:** Wikimedia Commons / Provided by Morris Hills Environmental Action Club  
**LEFT:** Saturation Curve / As temperature increases, water holds less carbon dioxide. **RIGHT:** Greenland Image / Scientists report that the Greenland ice sheet lost a record amount of 532 billion metric tons of ice during 2019.

The curve shows that if ocean temperatures continue to rise, the ocean will no longer keep the CO<sub>2</sub> that it is trapping. After that carbon is released, it only has one place to go: up. That will mean the ocean will have become a carbon emitter.

If the ocean starts emitting carbon dioxide, global warming will get much worse, leading to more ocean warming. More ocean warming will cause the ocean to emit even *more* carbon, resulting in a vicious cycle.

### The Ocean is Slowing Down

One of the most amazing systems our oceans boast is the "Great Conveyor Belt," a mechanism which transfers heat from the tropics to higher latitudes. But that conveyor belt is starting to lose steam: Since the mid-1900s, the Atlantic Ocean's circulation has slowed by around 15 percent.

Wind is the force that powers this giant conveyor belt, bringing warm water from the tropics to the poles. This warm water then cools down, making it denser, and it heads to the poles. The water also evaporates, and the remaining water has a higher salt content, further increasing density. The cold, salty water slowly flows back to the equator, where it warms up and starts to rise. Two key factors, water temperature and salinity, dictate the movement of this delicate system.

The process, the thermohaline (thermo: heat, haline: salt) cycle, can be easily disrupted by changes in climate. Experts already expect increased amounts of rainfall and

the melting of glaciers and sea ice in the coming decades as a result of global warming.

This will cause a large quantity of freshwater to mix with cold, salty water headed north. This freshwater is less likely to sink, due to the lower salt content. Currently, as ice on Greenland melts, vast amounts of fresh water rush into the North Atlantic Ocean.

The new influx of cold freshwater from Greenland into the ocean surface reduces the salinity of the water coming from the equator, making it less likely to sink as it is now less dense. This hinders the operation of the conveyor belt.

As the conveyor belt slows down, CO<sub>2</sub> is less likely to reach deeper parts of the ocean. This would hurt the ocean's ability to "store" this extra CO<sub>2</sub> from the atmosphere, where it would cause more warming.

### Rising Sea Levels

Not only does the ocean absorb a lot of the CO<sub>2</sub>, but also absorbs much of the heat energy that could stay in the atmosphere. As the ocean absorbs this energy (particularly at the surface of the ocean), the water expands and thus the sea level rises. This is in addition to the water from glaciers, and especially those of Greenland, that regularly flows into the ocean.

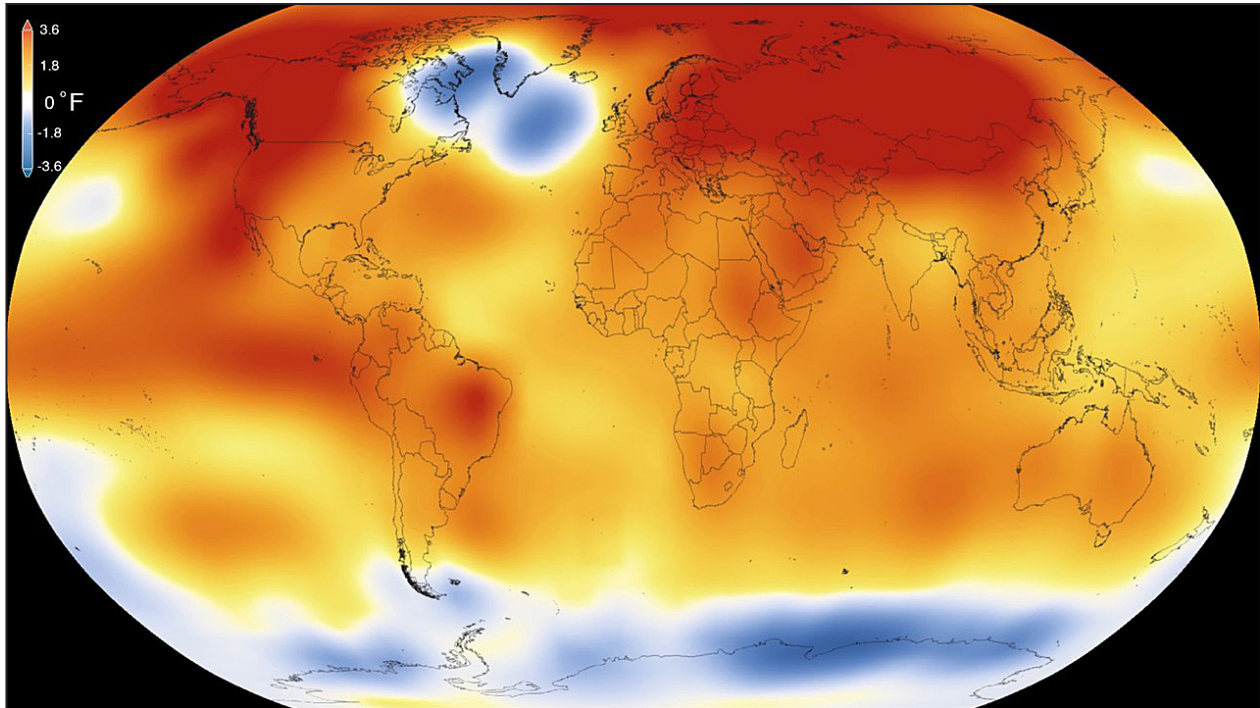
It is expected that the ocean will rise 3 feet by 2100 according to a recent United Nations climate change report.

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## THE OCEAN IS GOING TO BURP Here's Why You Should Care!



Cold Blob Image / NASA picture of "cold blob" of water. This is from the melting ice of Greenland into the North Atlantic ocean.

© NASA

In Florida alone, homes and cars are already at risk: 12 wastewater treatment plans are already 1 to 3 feet below the current sea level, which continues rising. The state is already spending billions of dollars to deal with the rising of the ocean. At times roads are even closed due to "sunny day flooding".

### A Tipping Point

Obviously the ocean cannot burp, but its ability to store CO<sub>2</sub> is being compromised. For decades, the ocean has been hiding the effects of global warming. By absorbing the excess carbon in the atmosphere, we are being provided temporary relief from the impacts of climate change. **But the ocean cannot protect us forever.**

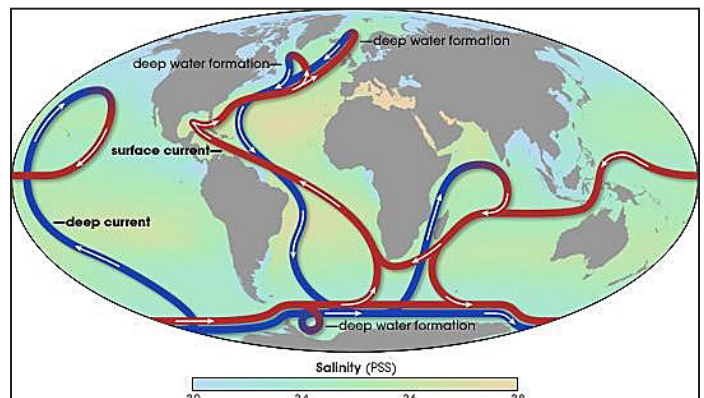
*Humans will not be able to adapt to climate change, but need to address it.* The knowledge is here and the time to act is now; what we do today will either pay dividends down the road or accelerate us further into a runaway greenhouse effect.

***If that point is reached, then trying to reduce CO<sub>2</sub> emissions becomes useless, like rowing a boat that just went over a waterfall. There is no turning back.***

### For More Information:

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[fcappuccio@mhrd.org](mailto:fcappuccio@mhrd.org)

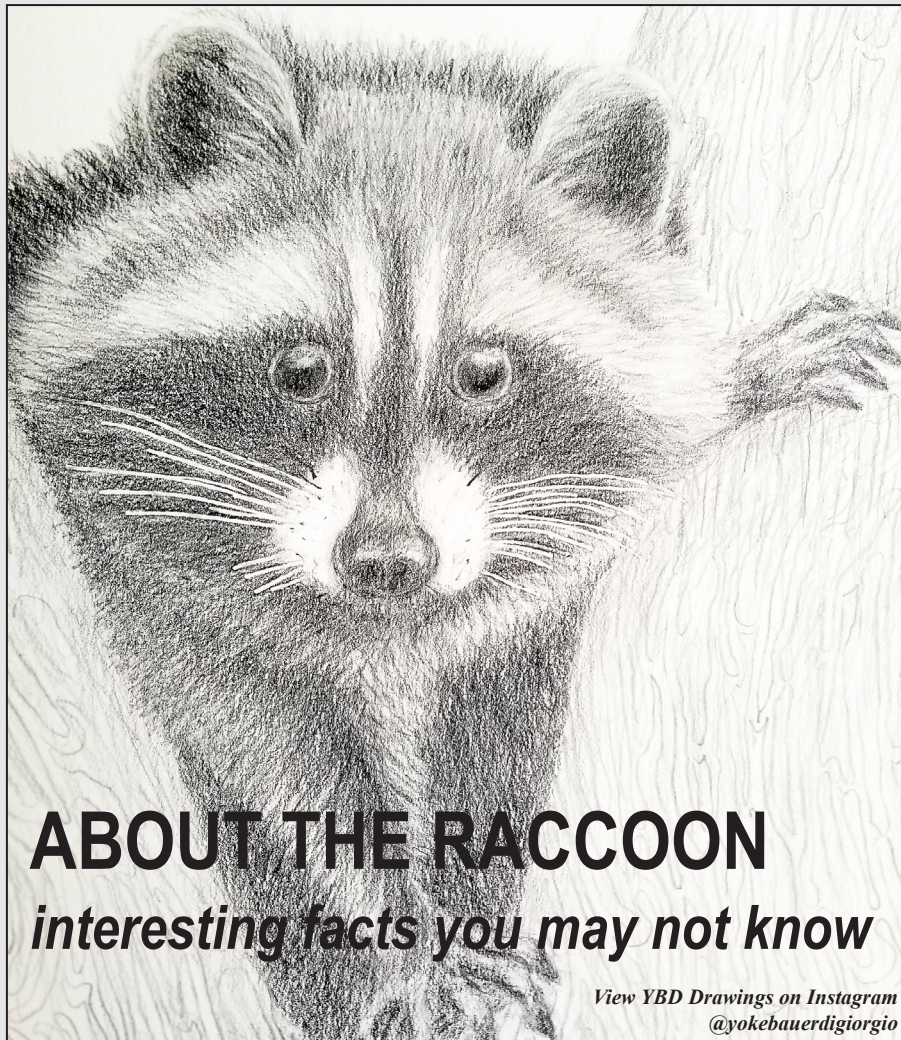
**Ahmed Joseph Elsayyid / Club President**  
[a.j.elsayyid@gmail.com](mailto:a.j.elsayyid@gmail.com)



**TOP:** © NASA **BOTTOM:** Wikimedia Commons / Provided by Morris Hills Environmental Action Club

**TOP:** Thermohaline Circulation Image / This large-scale ocean circulation takes an estimated 1,000 years to complete! **BOTTOM:** Tidal flooding, or sunny day flooding, in Florida.





# ABOUT THE RACCOON

## *interesting facts you may not know*

View YBD Drawings on Instagram  
@yokebauerdigorgio

© Drawing by Yoke Bauer DiGiorgio

Whether your home is surrounded by trees or skyscrapers, raccoons (*Procyon lotor*) are likely part of your local wildlife population. They are among the rare species that have actually benefited from the spread of humans. Populations in North America have skyrocketed in the past several decades, and this is despite the destruction of much of their natural environment. They are adaptable enough to thrive in rural, urban, and suburban environments and in diverse climates.

Life expectancy: 2 – 3 years in the wild (up to 20 years in captivity).  
Length: 16-38 inches.  
Weight: 8-20 pounds.  
Males are larger than females.

**SCORE A HIGH MAMMAL IQ** – above cats and just below monkeys. One study showed that raccoons can remember solutions to tasks for up to 3 years.

**CITY RACCOONS MAY BE MORE CLEVER THAN THEIR COUNTRY COUSINS.** Raccoons are regarded by scientists as intelligent creatures, but city dwellers may notice that their local raccoons reach special levels of cunning. This may be because urban raccoons are forced to outsmart human-made obstacles on a regular basis. Raccoons accustomed to life around humans are better equipped to solve unconventional problems. In a study, Dr. Suzanne MacDonald, who studies raccoon behavior at York University, planted garbage cans containing food in urban and rural areas. When it came to opening the tricky lid, most city raccoons could figure it out while the country raccoons failed each time.

**CAN RUN UP TO 15 MPH**, even while climbing up trees! They can fall from a height of 131 foot and be unharmed. They can also climb down trees, head first, by rotating their hind feet 180 degrees.

**CAN MAKE OVER 50 DIFFERENT SOUNDS TO COMMUNICATE!**

**THEIR MASKS HELP THEM SEE MORE CLEARLY.** The black fur works just like the black stickers athletes wear under their eyes: The dark color absorbs incoming light, reducing glare that would otherwise bounce into their eyes and obstruct their vision. At night, when raccoons are most active, less peripheral light makes it easier for them to perceive contrast in the objects of their focus, which is essential for seeing in the dark.

**DISLIKE TOMATOES!** While raccoons are omnivorous creatures that will eat almost anything, they steer clear of tomatoes. They are extremely clean animals and have been known to place their food in water to wash it before consuming it and dig latrines in areas where they frequently reside for sanitary waste disposal.

**“SEE” WITH THEIR HANDS.** While most animals use either sight, sound, or smell to hunt, raccoons rely on their sense of touch. Their front paws are incredibly dexterous with 5 fingers on each front paw containing roughly four times more sensory receptors than their back paws—about the same ratio of human hands to feet. And they are one of the few animals that are able to use all 5 fingers. As a result, they can successfully complete many unusual functions like opening the latch of a cage, untying knots, and even picking human pockets. They are able to pick up coins as thin as dimes. Further, they heighten their sense of touch by “dousing” - wetting their paws to stimulate the nerve endings and allowing them to feel more than they would otherwise.

**Yoke Bauer DiGiorgio**  
*Wildlife Artist / Co-Founder and*  
*Editor Nature's Newsletter /*  
*Co-founder and Director DVEA*

### RESOURCES:

<https://www.thefactsite.com/raccoon-facts/>

<https://www.mentalfloss.com/article/527175/10-clever-facts-about-raccoons>

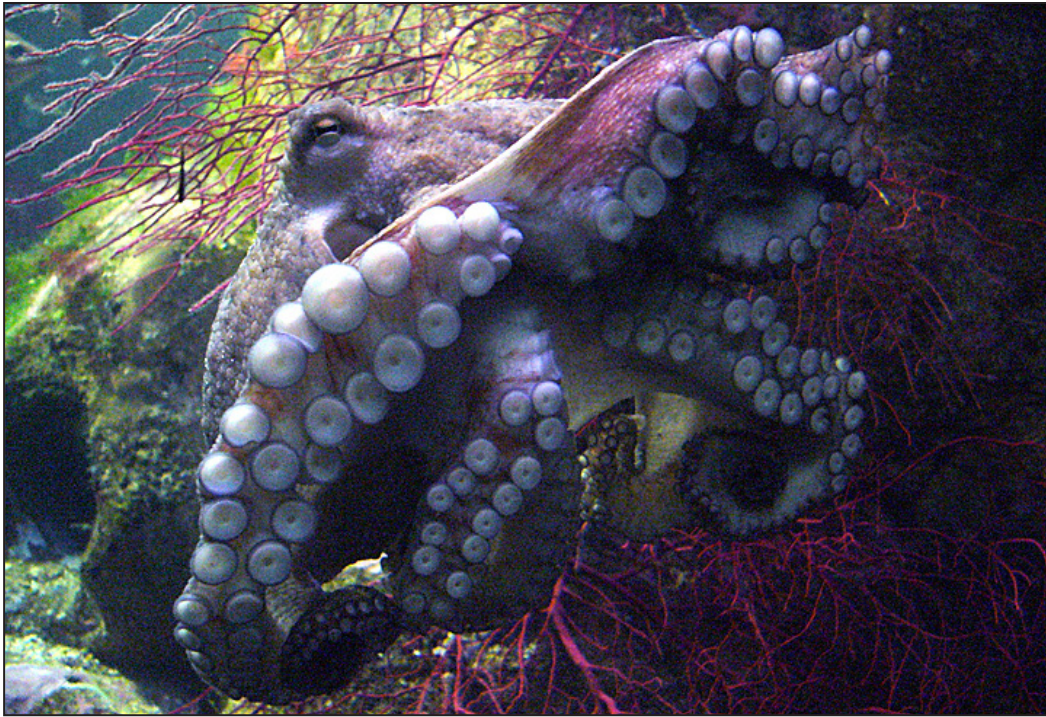
<https://www.thefactsite.com/raccoon-facts/>

<https://www.sunnysports.com/blog/5-weird-facts-raccoons/>

<http://nautil.us/issue/34/adaptation/the-intelligent-life-of-the-city-raccoon-rp>

[http://www.biokids.umich.edu/critters/Procyon\\_lotor/](http://www.biokids.umich.edu/critters/Procyon_lotor/)





© [https://en.wikipedia.org/wiki/Octopus#/media/File:Octopus\\_vulgaris.2\\_-\\_Aquarium\\_Finisterrae.JPG](https://en.wikipedia.org/wiki/Octopus#/media/File:Octopus_vulgaris.2_-_Aquarium_Finisterrae.JPG)  
*Octopus in captivity at Aquarium Finisterrae in Corunna, Galicia, Spain. They have been known to escape from their tanks.*

# OCTOPUS: THE 8-LIMBED WONDER

by Pirchia Broder  
*Naturalist*

I have been a lover of animals, wild and domesticated, for as long as I can remember. Throughout my life I have had the companionship of animals. In addition to observing animals in the wild, I have volunteered as an educator in museums and wildlife parks to engage with visitors and assist in educational programs.

Recently, after watching a documentary, I became very interested in one of the most unique and earth's oldest creatures. And so, I had to learn more.

**They are not the terrifying monsters of the deep dark sea portrayed in so many tales. But, and this is a big but, THEY ARE VERY UNUSUAL.**

They use tools, camouflage in the blink of an eye by altering their color and texture, solve mazes and they are escape artists. They are so flexible they have been known to squeeze through the smallest of openings.

They can be taught. They even play with toys. They have individual personalities and, yes, they can recognize you. They are Octopuses (plural of Octopus).

Octopuses demonstrate intellect and decision making, a unique life form that so many overlook.

For millions of years Octopuses have inhabited our planet; roaming every ocean. They belong in the cephalopod class along with cuttlefish and squids and, to date, approximately 300 species exist.

Giant Pacific Octopuses are eight-limbed mollusks, invertebrates to be precise, lacking a skeletal structure, therefore no bones. Without a skeletal structure they are extremely flexible and able to squeeze their entire bodies into very small spaces. As long as their beaks can fit in so can they. According to a Nat Geo video a Giant Pacific Octopus is shown squeezing it's body through a tube the size of



© [https://tedideas.files.wordpress.com/2019/05/featured\\_art\\_v1.gif](https://tedideas.files.wordpress.com/2019/05/featured_art_v1.gif)

**TOP:** Octopus before camouflage.

**BOTTOM:** Octopus resembling its surroundings.

a quarter (<https://www.youtube.com/watch?v=LNvMgGpGrrs>).

The Octopus is strange looking with its rounded body, two eyes, a beak,

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## OCTOPUS: THE 8-LIMBED WONDER

3 hearts, blue blood (due to a copper-rich protein called hemocyanin) and eight limbs comprised of six arms and two legs: each with two rows of suckers. They have nine brains. A central brain controls the nervous system and in each of their eight limbs resides a small brain. With nine brains and suckers each limb is able to taste, touch and move independently.

Remarkable camouflage abilities, a venomous beak, black ink and tools are utilized for protection and hunting. Within seconds pigment cells and muscles enable the Octopus to alter its color and texture so that it matches the colors, textures and patterns of its environment.

The beak and venomous saliva is utilized for cracking open crab and shrimp shells – their favorite foods. Sharks, eels, and whales are their predators. When threatened, as a distraction, dark toxic ink is squirted in a big cloud while at the same time propelling them in the opposite direction, thereby making an escape.

Gathering rocks to erect a wall as a barrier for shelter or carrying coconut shell halves along the sea bed, for later manipulation, have been observed. Both halves of the coconut are properly placed together so that Octopus can encapsulate its entire body. They have even been taught to unscrew the lid of a jar in order to remove its contents. There is a remarkable video showing an Octopus actually unscrewing a lid from the inside of a jar that the Octopus was encased in.

Unfortunately their life cycle is brief averaging 1-2 years. Within months after mating the male dies. The female dies shortly after the eggs hatch. Sperm is delivered to the female's mantle cavity with a special limb from the male. The female can lay as much as 200,000 fertilized eggs. During this time she will not hunt and if necessary will consume her own limbs (the limbs can regenerate). The female will live a short period of time after the eggs hatch.

**This coming Oct 8th is World Octopus Day. So how should we celebrate? How about a trip to a sea life / marine center or, perhaps, spend some time to simply learn more about these fascinating creatures?**

### RESOURCES:

<https://www.nhm.ac.uk/discover/octopuses-keep-surprising-us-here-are-eight-examples-how.html>

<https://www.pbs.org/wnet/nature/octopus-coconut-home-fd5q5e/19384/>

[https://en.wikipedia.org/wiki/Octopus#/media/File:Enteroctopus\\_dofleini\\_to\\_spawn.jpg](https://en.wikipedia.org/wiki/Octopus#/media/File:Enteroctopus_dofleini_to_spawn.jpg)

<https://www.daysoftheyear.com/days/world-octopus-day/>

[https://en.wikipedia.org/wiki/Octopus#/media/File:Octopus\\_vulgaris.2\\_-\\_Aquarium\\_Finisterrae.JPG](https://en.wikipedia.org/wiki/Octopus#/media/File:Octopus_vulgaris.2_-_Aquarium_Finisterrae.JPG)



**TOP:** © <https://www.nhm.ac.uk/discover/octopuses-keep-surprising-us-here-are-eight-examples-how.html>.

**CENTRAL:** © [www.pbs.org/wnet/nature/octopus-coconut-home-fd5q5e/19384/](https://www.pbs.org/wnet/nature/octopus-coconut-home-fd5q5e/19384/).

**BOTTOM:** © [https://en.wikipedia.org/wiki/Octopus#/media/File:Enteroctopus\\_dofleini\\_to\\_spawn.jpg](https://en.wikipedia.org/wiki/Octopus#/media/File:Enteroctopus_dofleini_to_spawn.jpg) ottom (Female giant Pacific octopus guarding strings of eggs waiting to hatch.)

<https://nationaldaycalendar.com/international-octopus-day-october-8/#::~text=On%20October%208th%2C%20World%20Octopus,legs%20and%20ink%2Dsquirting%20abilities.>





© Jill Wussow, Photographer

**LEFT:** Sandhill Cranes Over the Sandia Mountains: The sunset was spectacular, like many New Mexican sunsets. I heard the sandhills but didn't see them right away. This was one of two frames I was able to get. Perfect timing, perfect lighting. I wasn't even expecting them.

**RIGHT:** Bristlecone Pine: Have always been my source of solace. They're my church. Without fail, when I'm around them, I am overwhelmed, overstimulated and shed a few tears. I have so much respect for them, and it's almost as if I need a "bristlecone fix" when I'm in a dark emotional place. They'll bring me out of it. I did a solo hike in the dark, off trail, to a place I hadn't been and was granted about three minutes of incredible light. It was a glorious three minutes and I have a few versions of this photo. I'm glad it was so brief, really, because it made me appreciate it more. Nothing lasts forever, but bristlecones, as one of the oldest living organisms, almost do.

# CELEBRATION OF THE WILD AND NATURAL WORLD

by Jill Terese Wussow  
Biologist / Nature Photographer

***"The birds still remember what we have forgotten, that the world is meant to be celebrated"***

**– Terry Tempest Williams**

Celebration and respect of the wild world is not enough of a collective priority. When I was old enough to understand this, still at a fairly young age, it was devastating to me, because this has always been intrinsic and necessary to my happiness and state of mind.

The natural world, wildlife especially, has always fascinated and enthralled me. It is no surprise then that I "grew

up" (did I?) to become a biologist, mostly working with endangered or threatened bird species. Eventually I got a decent camera and a few lenses. I never had an agenda with the camera, rarely had/have a mission. I'm outside often, I am lucky to be in beautiful places regularly. As a biologist, observer, and empath, I see things others may not. And I think I often see (and feel) things differently.

I know very little about photography. I've never taken classes and am not up to date on the latest gear. Please

don't ask me to talk about or explain f-stop and aperture! I have a sense of creativity and an artist's mind for composition, and some things come naturally, but the technical aspect is mostly lost on me.

My approach to photography is a bit unconventional. I don't usually seek out a photographic opportunity. I often have my camera with me, and of course if there is an extraordinary sunset, I'd love some photos, but I really prefer and need opportunities to be organic. If I'm in the right place

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## CELEBRATION OF THE WILD AND NATURAL WORLD

at the right time, have the right gear, get the photo I'm happy with, that's a plus.

While I may whine about light sometimes, I've learned not to beat myself up if I don't get the coveted shot, if I don't have my camera with me, or if my settings are wrong. This wasn't always the case, and I've evolved in a big way from how I used to feel, 12 years ago. I still remember missing a photo opportunity of an American Kestrel with an unidentified snake, right in front of me, but I was fumbling too much with my camera. I was so mad I didn't get that photo. These days, I'll throw out a heavy sigh, but instead of getting so frustrated, I revel in the fact that, "Hey! What I just witnessed was incredible, beautiful or noteworthy in some way, and authentic, camera or not."

That's what's key for me: The experience and the fact that I have been lucky enough to witness the inherent goodness the natural world gives us. So often it's taken for granted. I appreciate the memory, I want to feel the experience in its own real, fleeting time.

Capturing that particular moment and setting it in stone is of course, one of the beauties of photography. And I'm grateful that I have a heap of really special and unique images that are able to represent those moments. A photo has the ability to evoke a lot of emotion, empathy, and to engrain a new way of thought or consciousness that one may not have been aware of beforehand. Photography can have a great potential for good.

However, I believe that cameras (and phones especially) and having the ability to almost always take a photograph at any given time has spoiled us somewhat. Perhaps that luxury has led us to forget how to feel and how to engage in the now, in the present. It's an issue with the modern world in general, especially with the internet and social media often invalidating real life and real moments and real experiences, particularly with nature. I feel it can be rather dangerous in regard to our relationship with the natural world.

For me, each photograph is part of a life experience, a memory. Each photo has a story and a history, a life of its own. I've taken so many thousands of photos and can admit I can remember the backstory of most of them.

Sharing and reliving that with others is extremely fulfilling for me. When someone asks me about a photo (or even if they don't!) and is genuinely curious about it, it's very touching. But more importantly, it means they care about the subject. And every subject I shoot; I respect, I love, and I worry about. I want, and I need others to also care.

I've had ample opportunities thanks to travel and work, to photograph and experience what I love and respect: the



© Jill Wussow, Photographer

**TOP:** Pronghorn Antelope: An extremely lucky moment. I was driving in the middle of nowhere on the border of Idaho and Nevada and these pronghorn posed perfectly for me. I got one good photo and they shifted position and took off. It's still one of my favorite images I've taken. Definitely "right place right time".

**CENTER:** American Pika: I've long been a bit obsessed with pikas, one of the species most negatively affected by climate change, and they are the one thing I will sit patiently for. Mostly I love learning about them and observing their behavior, which makes taking photos of them much easier. I have many photos of pikas that I love, but not many of them vocalizing. This is a recent one where the little friend happened to be framed perfectly between those rocks.

**BOTTOM:** Horned Lizards: Another species I've always loved but don't see too often. I came across this female and male mating while on my way to a far-away field site. Incredible to witness, not something you see every day. I was happy I had my big lens on hand, so as not to get too close to disturb them.

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## CELEBRATION OF THE WILD AND NATURAL WORLD



wild and natural world, our public lands, the animals and plants that call this incredible place home. I hope that my respect, love, and compassion for this is conveyed through my photographs.

Awareness and education are critical to protection and conservation.

***If I have a goal with my photography, it is to make people aware, and therefore, hopefully, bringing a desire to save what needs saving.***

**For More Information:**

**[www.jillwussowphotography.com](http://www.jillwussowphotography.com)**

**[www.facebook.com/JillWussowPhotography/](https://www.facebook.com/JillWussowPhotography/)**

**TOP:** Sandhills and Snow Geese: This location is popular with birders and photographers. I've been a few times since living in New Mexico, but this morning was something special. I don't even remember other people being there. The lenticular clouds, the light, the birds...all aligned in that moment. People have told me they don't think this image is real, but I can assure you that it is very real.

**RIGHT:** Golden-cheeked Warbler: An endangered songbird, I worked with and studied these birds for six years. I became very attached to them, and over the years, could recognize individual birds by song and/or territory. I rarely take my camera in the field while I'm working, but I did this day. A female was feeding a fledgling while the male was nearby feeding the other two. I somehow managed to get some photos on one of my last days in the field (ever) with these birds. It was a nice goodbye present for me.



© Jill Wussow, Photographer





**LEFT:** Chimney swift flying above Pipeline Trail, Mentor Ohio. **RIGHT:** Tower before the first coat of paint.

# BUILDING TOWERS TO SAVE THE CHIMNENY SWIFT

by Amanda Sebrosky,  
*Founder, Northeast Ohio Chimney Swift Conservation Society /  
 Director-at-Large, Western Cuyahoga Audubon Society*

As a volunteer for Lights Out Cleveland (LOC), I am frequently at Lake Erie Nature and Science Center in Bay Village, Ohio, where LOC is based. LOC volunteers collect birds (and bats) that have collided with buildings in downtown Cleveland, Ohio, during the spring and fall migrations. The live birds are rehabilitated, and the dead birds are weighed and identified and then taken to Cleveland Museum of Natural History to be kept for research purposes. I collect the data on the dead birds and enter it in the database <http://wild-one.org>. It was during one of the marathon sessions of data collection in the Fall of 2019 that I had the privilege of helping feed some baby Chimney Swifts. Needless to say -- I was hooked!

The senior rehabilitation technician mentioned that the Chimney Swift population was severely declining due, in

part, to habitat loss. I resolved to help and established Northeast Ohio Chimney Swift Conservation Society (NEOCSCS) with the dream of making the west side of greater Cleveland a center for Chimney Swifts in Northeast Ohio. My original idea was to sponsor 100 towers in Northeast Ohio. How tough could that be, right??? I was going to pay for the towers and help with the build -- all that was needed was a small amount of public space and help with the build.

In the course of my research, I learned about a book by wildlife rehabilitator Paul Kyle of Texas that described how to build a tower that he had developed as replacement habitat for Chimney Swifts. In Texas, there is a great deal of success with occupancy but, up North, many people

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## BUILDING TOWERS TO SAVE THE CHIMNEY SWIFT



**LEFT:** Work in progress during the “builds for Royal Oaks”. **RIGHT:** Amanda Sebrosky standing next to completed the “builds for Royal Oaks”.



© Photos courtesy **Amanda Sebrosky**

have had difficulty attracting Chimney Swifts to the towers. Thanks to Facebook, I was contacted by a naturalist with Lehigh Valley Audubon Society in Pennsylvania who found that by making some key changes to the ‘Kyle’ tower, he had 100% occupancy.

These changes included a larger entry opening and wider interior dimensions so I created a set of instructions for the larger towers that Northern Chimney Swifts seem to favor. No idea why they might like bigger towers except that some peer-reviewed papers suggest that increased temperatures are leading to a decrease in the size of birds, in general. It’s much hotter in Texas so perhaps their Chimney Swifts are smaller?? Or the 30 years the Kyles have been building towers has favored a smaller bird? No idea but one group of birders in Ontario found only about a 3.8% occupancy of the smaller diameter towers while the naturalist in Pennsylvania got 100% occupancy when he at least made a larger entry opening. Both locations had ample forests so I don’t believe that availability of forests was the issue with occupancy.

While my city was excited and immediately agreed to place one in a city park to see how the citizenry accepted the towers, I found a wide range of attitudes toward replacement habitat for Chimney Swifts in the metroparks

of which there are two in my area. One metropark rings the greater Cleveland Area while the other is dotted throughout Lorain County. Both park systems have divisions managed by different people. Some managers were very excited to have towers placed but 1 or 2 thought they were a worthless pursuit just because of the low occupancy rate.

Before Covid-19 hit, we were able to sponsor and place one tower in Royal Oaks Park in Lorain County Metroparks (LCMP); at the same time, LCMP had gotten a grant to place a second tower at French Creek Park. We hope to sponsor another at Sandy Ridge in LCMP when Covid-19 restrictions are lifted. NEOCSCS, along with Western Cuyahoga Audubon Society and others, helped sponsor a Chimney Swift tower as an Eagle Scout project at Mentor Lagoons at Mentor, OH, and the scout did a beautiful job. We hope to sponsor more Eagle Scout projects for building the towers - it seems like a win-win!

One shortcoming of some projects is that maintenance does not seem to be part of the project design so NEOCSCS has taken on the project of maintenance of any tower on public land that we find in disrepair. We are currently working to fix a tower at Cleveland Metroparks’ Old Field in South Chagrin Reservation in Moreland Hills, OH. A youth

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## BUILDING TOWERS TO SAVE THE CHIMNEY SWIFT

### ABOUT THE CHIMNEY SWIFT

The chimney swift, *Chaetura pelagica*, is a medium-sized bird with very long, slender wings and very short legs. Their wide bill is so short that it is hard to see. They are dark gray-brown all over, slightly paler on the throat. At a distance and when backlit against the sky, they can appear to be almost black. They fly rapidly with nearly constant wingbeats, and often give a high, chattering call while they fly.

Like all swifts, they cannot stand or perch but are adapted to grasping the inside of old hollow trees and masonry chimneys.

The chimney swift catches all its food while in flight and feeds primarily on flying insects (and also on airborne spiders). They can eat a third of their body weight in mosquito-sized insects daily, which makes them a great friend to humans.

Chimney swifts generally mate for life. It builds a bracket nest of twigs and saliva stuck to a vertical surface, which is almost always a human-built structure, typically a chimney. The female lays 4–5 white eggs. The altricial young hatch after 19 days and fledge a month later. The average chimney swift lives 4.6 years.

They are migratory, arriving in early spring to the US then flying several thousand miles back to South America in the fall.

All bird populations are suffering due to pesticide use, the climate crisis, collisions with buildings and towers, feral cats and habitat loss. Chimney swifts' habitat is shrinking as chimneys are capped, torn-down or no longer needed in new construction and forests in the US and South America shrink. Because of these factors, chimney swift populations have fallen rapidly, decreasing by over 50% since 1966 according to Audubon Society.

One-way humans can help chimney swifts is by building artificial chimneys called towers, giving chimney swifts more places to nest and roost.

### RESOURCES:

[https://www.allaboutbirds.org/guide/Chimney\\_Swift/id](https://www.allaboutbirds.org/guide/Chimney_Swift/id)

[https://en.wikipedia.org/wiki/Chimney\\_swift](https://en.wikipedia.org/wiki/Chimney_swift)



© Jim Edlhuber; Photographer / [www.windowtowildlife.com](http://www.windowtowildlife.com)  
Female chimney swift by and in nest.

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## BUILDING TOWERS TO SAVE THE CHIMNEY SWIFT



**LEFT:** Amanda Sebrosky assembling first 2 sections of tower. **RIGHT:** A friend is assisting getting the 3rd section up.

© Photos courtesy Amanda Sebrosky

birder club had volunteered to help with maintenance and building before Covid-19 hit but that has been put on hold for the time being.

Two issues with building towers is the size and flyway space needed. The towers need at least 10 - 25 feet of clear sky around the tower and be 12 feet tall with insulation between the inner and outer layers to keep the chicks cool. Using T1-11 laid horizontally for the interior gives a surface with grooves that Chimney Swifts can grasp. If you use T1-11 for the outside (running vertically), that is about 200 pounds in total. Even building in sections, a Chimney Swift tower build is not for the weak or faint of heart! Then there is the issue of transportation and tipping into place.

Paul Kyle suggests building the tower in sections then lifting each section into place. I built mine like this and was able to get the first 2 sections together with a winch but needed 2 other people to get the third section in place. A backhoe, mini-crane or scaffolding would have REALLY helped! It really seems as though placing the sections together on the ground then tilting into place would be easier -- but again -- it all depends on the number of people, experience and tools you have.

I originally was going to bankroll the towers myself but the bigger towers, which I call 'Burnet towers' after the naturalist in Pennsylvania, added at least 40% to the total cost so I started to fundraise through Facebook. I have recently been able to get tax-deductible contributions because

Western Cuyahoga Audubon Society is kindly acting as my financial agent. WCAS has also given much good advice about fundraising.

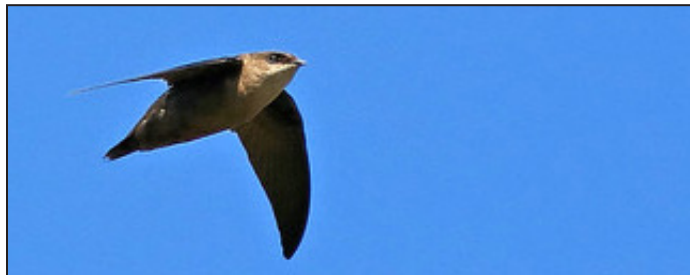
Please like 'Northeast Chimney Swift Conservation Society' and 'Western Cuyahoga Audubon Society' on Facebook. Contributions can be made for building towers on the Western Cuyahoga Audubon Society website, just be sure to earmark the donation for 'Chimney Swift towers'.

### RESOURCES:

<https://www.wcaudubon.org/>

<https://www.wcaudubon.org/story-blog/spring-2020-chimney-swift-tower-update-by-amanda-sebrosky-chimney-swift-conservation-society>

Request "Instruction Sheets" for free at: [info@wcaudubon.org](mailto:info@wcaudubon.org) (Please note that these are new instructions that have not been tested so may have glitches, but they will give you a good idea as to how to proceed.)



© Tom Fishburn, Photographer

Chimney swift flying above Pipeline Trail, Mentor Ohio.





**TOP (Left to Right):** Curious baby black bear; gray foxes; rehab raccoon. Maybe a size too big?  
**BOTTOM (Left to Right):** Sleepy coatimundi; black bear Griz - bearly awake.

© Photographs provided by SWCC

# INTERESTING AND FUN FACTS

by Robyn Moul

**Southwest Wildlife Conservation Center**

## National Hammock Day

Celebrated every July 22, National Hammock Day honors that universal symbol for relaxation. Developed by the Mayans of Central and South America for sleeping and resting, a hammock - made of fabric, rope, or netting - is suspended between two points such as posts or trees.

Humans love lolling in a hammock. Sleep, wake, drink, eat, read, and repeat. It's the perfect way to celebrate National Hammock Day.

At Southwest Wildlife Conservation Center (SWCC), our animal

hammocks are made of everything from mesh, to used firehoses and even a pair of pants! (OK, that might be a stretch, but we couldn't resist; the photo speaks for itself.)

Firehose is especially strong and durable. That's important whenever the occupant weighs over 500 pounds!

## Hair vs Fur / What's the difference?

One of the features shared by nearly every mammal species on earth from antelopes to zebras (and even humans) is that their bodies are covered in hair.

Hair and fur have the same chemical make-up and are indistinguishable, both are made from keratin. As humans however, we don't say I need



© Photograph provided by SWCC  
 Humans "testing out" the bear hammock made from recycled firehose.

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## INTERESTING AND FUN FACTS

a “fur cut,” we say I need a “haircut.” Fur is also known by another name: pelange. Pelange refers to the hair on non-human, animals.

So just what are the differences?

Human hair does not stop growing, whereas an animal's fur stops growing when it reaches a certain length. The color of human hair is consistent in color from root to tip, but animal fur varies from root to tip.

Different types of hair:

- Guard hairs form the outer coat of the animal, shed water, and protect the inner hair and skin.
- Wool is the hair of sheep, llamas, and some other ruminants.
- Tactile hairs – also known as whiskers, are found on the head/shoulders or ears. They provide sensory functions.
- Special purpose hairs found on tails and manes differ from the hairs found on the body of the animal.
- Porcupine quills are even considered hairs, as they are made of keratin.
- Even a pangolin's scales are made of keratin, and are considered “modified hairs.”

For more than just warmth...

A mammal's fur can serve many purposes in addition to insulation. In some species fur can be a source of camouflage. Small animals' coats generally match their environment, so they blend with the dirt.

Fur coloration can differentiate males from females, or as in the case of a skunk a way to warn predators.

Mammals are so reliant on their fur, they spend an enormous amount of time grooming and keeping their “coat” in good condition. Dull, dirty, or matted fur sends a “warning” signal to prospective mates. Similarly in humans, unkempt hair can be a sign of poor health.

Depending on the time of year, the sanctuary animals at SWC Center sport anything from a full winter suit to a thin, lean summer one to withstand the heat.

### Wildlife Recued So Far This Year

As baby season charges onward through the summer here in Arizona, injured, orphaned, and displaced baby wildlife continue to pass through the clinic doors. Here are the stats on how many little ones we've cared for so far this year:

Raccoons: 38

Coyotes: 38

Skunks: 33

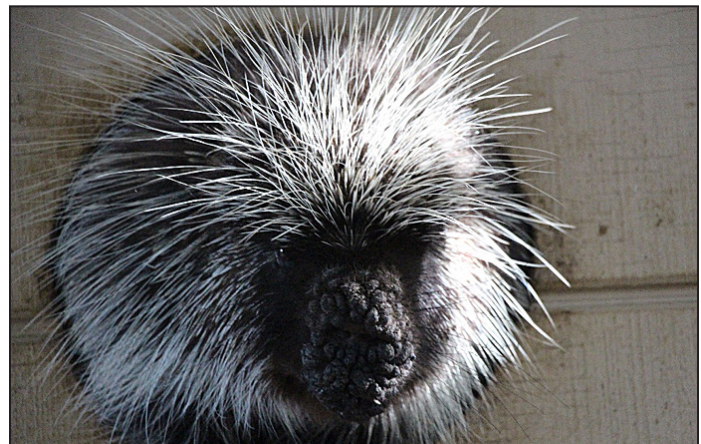
Bobcats: 25

Javelina: 6

Gray Foxes: 3

Coatimundi: 1

**SOUTHWEST**  
 **WILDLIFE**  
CONSERVATION CENTER



© Photographs provided by SWCC

**TOP:** Mexican gray wolf in his “winter” coat; red fox has more color variations than expected; black bear with a “california blonde” coat. **CENTER:** Porcupine's quills are made of keratin - therefore they're considered to be hairs! **BOTTOM:** Pangolin's scales are made of keratin, too - even those are “modified hairs!”

**For More Information:** [www.southwestwildlife.org](http://www.southwestwildlife.org)



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## Endangered: A New Board Game

# DISCOVERING NATURE



© Photograph provided by [www.sciencenews.org](http://www.sciencenews.org)

of forests to a shark attack to an animal rescue. After each player takes a turn, the year ends. And after a set number of years, the ambassadors are consulted. Each ambassador has a different preset list of conditions that must be met to vote "yes."

The game is modular, and each story line has its own challenges and adorable, animal-shaped wooden meeples. (A third story line, giant pandas, is available in an expansion pack, and a Kickstarter that began this month is raising funds for additional animal packs.) Each story line has three levels of difficulty, which, combined with the multiple role-playing options, provide plenty of variety throughout multiple plays of the game.

But while the game is fairly simple to set up and learn, winning proved deceptively difficult. Just when I thought I'd get enough ambassadors on my side, I found myself losing all my tigers or awash in pollution.

**Read More at Science News .....**

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## THE DELAWARE VALLEY EAGLE ALLIANCE

*working towards the conservation of  
our wildlife and natural resources*

*The Delaware Valley Eagle Alliance is a 501 (C)(3) not-for-profit organization with a mission to increase awareness, understanding and promote conservation of our wildlife and the natural environment. We accomplish this through our publications, projects and programs.*

*We believe that raising awareness and understanding will change attitudes toward conservation and our natural resources.*

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