



## Storytelling, Science, and Biodiversity

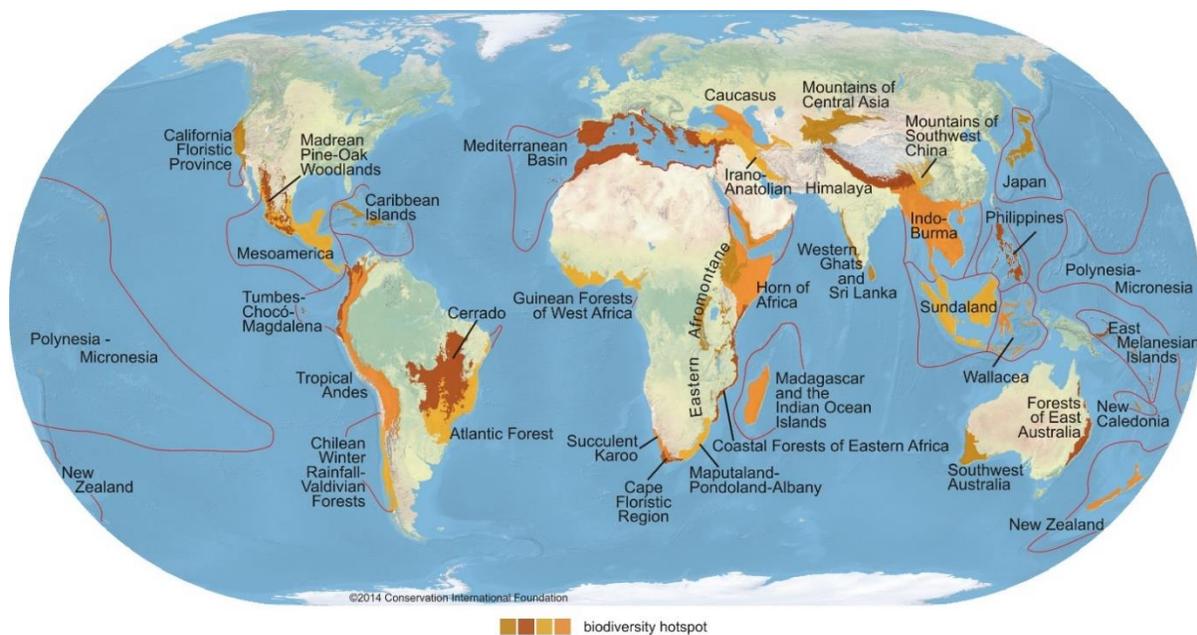
Natural science is a collective enterprise. Our scientific understanding of the world represents the cumulative work of countless individual scientists, each building upon the research of other scientists. In order for science to progress, then, scientists must communicate their research to one another, which they do primarily through publishing formal papers and presenting their work at professional science conferences.

It's also essential that their research be effectively communicated to other folks, such as policymakers, students in science classes, and the general public. And translating scientific research and concepts for non-scientists – such as a student in chemistry class or a patient in a doctor's office – often requires special communication skills so that the audience is engaged and can relate to the information personally. Good teachers are usually good storytellers who are able to reach their students through their brains *and* their hearts, making them feel as well as think (Romanelli, 2016).

As we face daunting 21<sup>st</sup> century challenges in healthcare and with our environment, a scientifically literate public sector is more important than ever. Further, it is not enough to just learn quantitative STEM facts to address these problems. We must also relate to the issues personally, to care about finding solutions and to be motivated to reach consensus and make decisions. For this summer assignment, let's think about how personal storytelling helps us to engage more deeply with our science, and become better stewards of the environment and life on Earth.

### **2021-22 CBGS Spotlight on Biodiversity:**

Biodiversity is a catchall phrase that basically means the shared life of planet Earth. We can measure biodiversity by going out and identifying and counting species that we encounter in nature. We can also assess biodiversity gains or losses scientifically through quantitative analysis. By far the most biodiverse communities on Earth are rainforests and coral reefs, where every cubic meter contains a panoply of life, and the loss of any cubic meter is devastating.



Conservation International (conservation.org) defines 35 biodiversity hotspots — extraordinary places that harbor vast numbers of plant and animal species found nowhere else. All are heavily threatened by habitat loss and degradation, making their conservation crucial to protecting nature for the benefit of all life on Earth.

To learn more about biodiversity, click here: [Biodiversity Hotspots](#)



*"One fifth of all the birds and plants on Earth evolved in the Amazon Basin (Steinhart/National Wildlife Federation, 1984). A typical four-square mile patch of rainforest contains as many as 1500 species of flowering plants, 750 species of trees, 125 mammal species, 400 species of birds, 100 of reptiles, 60 of amphibians, and 150 different species of butterflies (National Geographic Society, 2021). In one study, one square meter of leaf litter, when analyzed, turned up 50 species of ants alone (National Academy of Sciences, 2017)."*

Moreover, as humans have moved deeper into nature, biodiversity has diminished dramatically. The United Nations recently reported that around 1 million plants and animal species are currently threatened or endangered, facing extinction if no changes are made (UNSDG, 2019). They further assert that 75% of land and 66% of marine environments are significantly altered by human activity.

There have been five major extinction events on planet Earth, and currently we face a crisis so great that it has been called "the sixth great extinction" (Wake & Vredenburg, 2008). Scientists are racing to measure the losses and to save what we can, but the real need is to communicate with the public how and why this is occurring, so that we can have some hope of turning it around.

The most powerful voice for biodiversity alive on the planet today is Sir David Attenborough. At 94 years young, Sir David has seen more life on Earth than probably any other human being. Sadly, with that, he has also witnessed how much has been lost.



*Sir David Attenborough meets an Amazon toucan.*

There is also no greater storyteller of nature on the planet today than Sir David. Let's start the school year by paying homage to his life's work, and collectively pay attention to what he is telling us, *his testimony*. The word testimony conjures images of a courtroom trial. As we watch and listen, we should think of Sir David Attenborough as the star witness in the trial of Man v. Nature, documenting with evidence the tremendous loss of biodiversity from the 20<sup>th</sup> into the 21<sup>st</sup> century. Through his magnificent storytelling, we find connection to the natural world, we are awed, we learn to care, and we are moved to act. As you listen to his story, also think of the stories you will tell....

**Your Mission:** Let's examine biodiversity through the medium of storytelling as a way to communicate our experiences with nature, gain deeper science understanding, and develop greater curiosity of the natural world.

### 1. **Watch:**

- a) Netflix: "David Attenborough: A Life on Our Planet" 2020 (83 minutes)
- b) One (or both!) of the following two videos to experience how storytelling can teach you about science and engage your interests:
  - Netflix: "My Octopus Teacher" 2020 (80 minutes), newly crowned winner of the Oscar for Best Documentary Feature
  - PBS Nature: [Octopus-Making Contact](#) (54 minutes)

\* if you do not have Netflix, just let us know:

Bowling Green - [kgoff@cbgs.k12.va.us](mailto:kgoff@cbgs.k12.va.us), Warsaw - [kolsen@cbgs.k12.va.us](mailto:kolsen@cbgs.k12.va.us), Glens - [sbeam@cbgs.k12.va.us](mailto:sbeam@cbgs.k12.va.us)



2. **Essay Response:** How does the storytelling in these documentaries affect your experience of learning science? What can we learn about biodiversity from these visual stories that we cannot learn in a traditional classroom lesson? Did you feel connected to the people or animals in the story? Did you have any emotional responses as you watched? What is your overall impression of storytelling as a teaching tool?

**Directions:** Craft a 1-2 page response essay, typed, double spaced, size 12 font. Please be detailed in your writing, include examples from the videos to illustrate your points, and use your best writing skills. If you wish to include outside sources, make sure to cite them in a Works Cited section at the end of your essay.

3. **Telling YOUR Story:** As you've now seen, storytelling can be a powerful strategy for translating and communicating science to non-scientists (Cormick, 2019). Now it's your turn. We all have stories in our lives, experiences that we share with others to relate ourselves to them, to entertain, to amaze, to empathize. For this part of the assignment, write the story of an experience that you have had with science and/or nature, and include scientific information that can help your reader to better understand your experience. It does not have to be an epic tale, but a story of a real event in your life that you can share, a moment when you connected with the natural world. Incorporate real science into your tale.

**Ideas:** science from your kayaking trip on vacation; watching the hummingbirds who visit your birdfeeder every evening; ghost crab hunting on your summer vacation; your scout camping trip adventures; the story of working on your research project - the topic is up to you! Tell a story that educates the reader with some real science related to your experience that will connect your reader to you and teach them at the same time! Use the knowledge presented in the reading assignment to help you find an effective strategy for telling your story. Need help? Ideas? Check out [TED Talks](#) for lots of great examples of wonderful storytelling! A few recommended TED Talks:

- [Alexis Gambis: Why we need more real science in fiction](#)
- [Marco Tempest: The Electric rise and fall of Nikola Tesla](#)
- [Tierney Thys: Swim with the Giant Sunfish](#)
- [Ed Yong, Zombie Roaches and Other Parasite Tales](#)

**Works Cited:**

- Cormick, C. (2019). 'Who doesn't love a good story? — What neuroscience tells about how we respond to narratives'. *JCOM* 18 (05), Y01. <https://doi.org/10.22323/2.18050401>.
- Romanelli F. (2016). Are Great Teachers Great Storytellers? *American Journal of pharmaceutical education*, 80(6), 93. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5023985/>
- United Nations Sustainable Development Goals. (2019.) Nature's dangerous decline "unprecedented;" species extinction rates "accelerating." Retrieved from: <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>
- Wake, D. B., & Vredenburg, V. T. (2008). Colloquium paper: Are we in the midst of the sixth mass extinction? A view from the world of amphibians. *Proceedings of the National Academy of Sciences of the United States of America*, 105 Suppl 1(Suppl 1), 11466–11473. <https://doi.org/10.1073/pnas.0801921105>

**More Biodiversity Resources:**

- <https://marinebon.org/>  
<https://geobon.org/>  
[Studying biodiversity](#)  
[boninbox.geobon.org](http://boninbox.geobon.org)