Happy New Year!!

The 28 Percent

Women make up only 28% of the STEM workforce. This newsletter aims to change that.

By Makenna, 12th grade



February 2023

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girls who code 2024 SUMMER PROGRAMS

[THE MISSION]

Level up by becoming a coder this summer. Get the skills, network, and community you need to change the world with our two free programs.

WELCOME TO THE GAME. CHOOSE YOUR ADVENTURE.

VIRTUAL SUMMER IMMERSION PROGRAM

Ready for a multiplayer experience?
Build a network and invest in your future in live classrooms hosted by top companies.

Who gets to join?
- 9th-11th grade girls and non-binary high school students, with or without prior coding experience, including alums.

What will you learn?
- Design computer games using p5.js, a JavaScript library for creative coding.

What's in it for you?
- Find support and community from devoted Teaching Teams and classmates.
- Get career inspiration and mentorship from exclusive Partner Events.
- Enhance your experience with grants and laptop and hot spot access.

When does the program take place?
- Round 1: June 14 – June 28
- Round 2: July 8 – July 19
- Round 3: July 29 – August 9
- Classes meet M-F for 2-3 hours, followed by independent work time and optional Student Hours.

SELF-PACED SUMMER PROGRAM

Prefer single-player life?
Explore hot topics in tech and become a coder on your own schedule.

Who gets to join?
- 9th-12th grade girls and non-binary high school students, with or without prior coding experience, including alums.

What will you learn?
- Choose from courses in Cybersecurity, Data Science + AI, and Web Development tracks.

What's in it for you?
- Enjoy the flexibility to learn independently, at your own pace.
- Connect with fellow coders and Advisors through Discord and Student Hours.
- Apply your new skills to create projects with real-world relevance and impact.

When does the program take place?
- July 1 – August 9
- Each course in a track takes 3-6 hours to complete.

KEY DATES:

Early decision deadline: February 14

Regular decision deadline: March 22

girlswhocode.com/summerapply

JOIN THE FUN:



EVENTS & OUTREACH FROM THE JMHS CREW



VOLUNTEERS NEEDED

REPAIR CAFE	FEB. 27 10 AM
AMIGOS DE LOS RIOS	FEBRUARY WEEKENDS
ARROYOS FOOTHILLS CONSERVANCY	ON WEEKENDS
ARLINGTON GARDEN	FEB. 10 9 AM
SAN GABRIEL VALLEY HABITAT FOR HUMANITY	FEB. 16 FEB. 18 MARCH. 23

Sylvia Earle: A Deep Dive Into Her Mission

written by Ariana Soto, JMHS Chapter

If you're interested in marine sciences and algae, you've probably heard of Sylvia Earle at least once. With over 50 years of experience in the field, Ms. Earle has made significant efforts in raising awareness and advocating for marine life and conservation. She is an oceanographer, esteemed researcher, explorer, and much more. As president of the nonprofit "Mission Blue", she's helping the creation of a wide-scale and global network of MPAs (Marine Protected Areas). She's been featured on TED and won several awards for contributions to humanity, such as the Princess of Asturia's Award for Concord in 2018 and the TED Prize in 2009. A docuseries named after her nonprofit, Mission Blue, is available on Netflix to watch now.

The goal of Mission Blue is to spread awareness and produce interest in creating Marine Protected Areas, or as she puts it "hope spots" around the world. Activities that harm marine life like fishing and deep sea mining would be restricted within the hope spots to mitigate the effects the fishing industry have on aquatic ecosystems and the creatures that make it up. Mission Blue targets areas that are especially at risk of complete loss of biodiversity, rapid species death, and other problems of that nature, and incentivizes the public to aid them in turning these areas into hope spots. According to the Mission Blue 2022-23 Annual Report, the current 151 hope spots span a total of 58 million square kilometers across the ocean. Earle and everyone working with Mission Blue aims to have 30% or more of the world's ocean area highly protected by 2030.

n addition to her nonprofit, Earle has an impressive record of research under her belt. In 1965, she took part in the discovery of a new kind of red algae called Hummbrella Hydra. She pursued higher education in St. Petersburg Jr. College, Florida State University, and Duke University. After receiving her Ph.D in phycology (the study of algae), she was a part of a research fellowship program at Harvard University for a year.



While working as a researcher at UC Berkeley, she led the first ever all-girl team on Tektite II, a project coordinated by the US Department of the Interior. During this project, Earle and her team stayed underwater in a study area for several weeks, exploring the Virgin Islands. In 1979, set the women's depth record at 381 meters (over 1,200 ft!) underwater. This record has yet to be broken. In 1990, Earle joined the National Oceanic and Atmospheric Administration as the first female Chief Scientist.



Her position there was brief, however, because she resigned two years later as she felt she could do more for her cause by working independently of the government. These accomplishments and feats are but a fraction of what Earle has done to advance the resuscitation of healthy, thriving aquatic ecosystems around the globe. Mission Blue is her life's mission and simultaneously a mission made for the lives of others. She's an inspiration to many, including myself, who wonder if they can make as big of a direct impact on matters they care about the way she does.



Endangered Species Spotlight: Mariana Fruit Dove

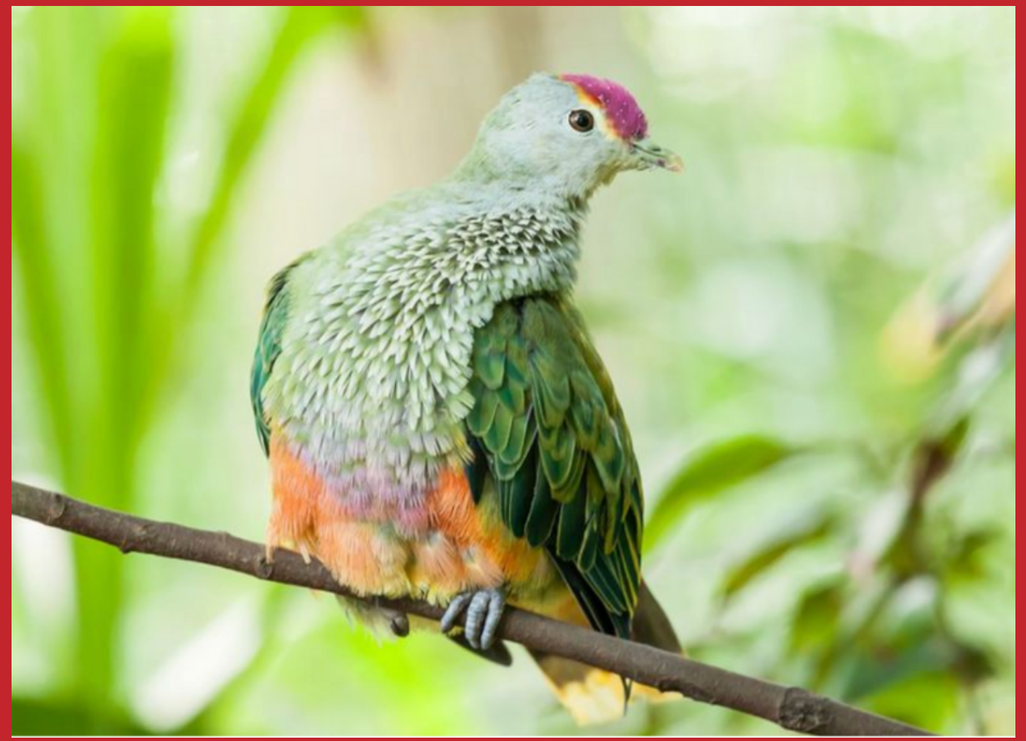
written by Kaley Simkins

The Mariana Fruit Dove is native to the Northern Mariana Islands and is known for its bright plumage. These colorful patterns can help them camouflage with their surroundings on tropical islands, making them hard to spot with the naked eye. The birds are thought to be solitary and territorial in the wild, as they are not often observed in their natural habitat, but they will live up to 20 years in captivity. Their diet consists mainly of fruits that they can reach in tall trees since they would rather walk along the branches than fly, but they will turn to leaves, flowers, and seeds for sustenance as well. Fruit doves mate for life and breed all year round, but the Mariana Fruit Dove's season takes place between April and July. Only one egg will be laid at a time but both parents will equally contribute to incubating and raising the young. This specific species of fruit dove is listed as endangered and there are an estimated 7,500-12,500 mature individuals left.

In the 1940s, the invasive brown tree snake was introduced to Guam, which is next to the Northern Mariana Islands in the western Pacific Ocean, through U.S. military transports after World War 2. The Fruit Dove population on the island rapidly diminished and was eradicated by the 1980s as the venomous snake established itself as a vicious predator. Since then, biosecurity measures have been put in place to monitor other occupied islands and prevent further damage to the population. Another danger to the Mariana Fruit Dove is human expansion, which contributes to habitat loss. Additionally, noise pollution from construction scares the birds deeper into their forests.

Preventative measures have been enforced in the Commonwealth of Northern Mariana Islands to stop the accidental introduction of the brown tree snake. The islands of Saipan (the largest island in the CNMI and the capital), Tinian, and Rota conduct inspections of planes and vessels at their airports and seaports, and they have snake traps set up at their port entrances. Many zoos, including the Saint Louis Zoo, the Houston Zoo, and the Aquarium of the Pacific, have incorporated Fruit Dove conservation into their species protection efforts. The Saint Louis Zoo specifically participated in a program to capture wild birds in 1993 and is currently breeding them in captivity to support the population. Lastly, the Saint Louis Zoo is part of a cooperative breeding program called the Species Survival Plan for Mariana's Fruit Doves, which has several zoos working together to ensure the survival of the species.







The Magical Multiverse of Mushrooms

written by Paulina McConnell

Spongy, awkward, and just about every shape and size possible, mushrooms have made appearances in just about every culture. Indigenous people of the Americas used them to heal wounds, they were classified as anti-inflammatories by Hippocrates in 450 BCE, and Siberian shamans consumed them to reach heightened mental states in ceremony. Today, they're finally taking their rightful place in modern medicine, and have even made it into Super Mario. What's so special about these strange plants?

Well, to start, they're not actually plants. Mushrooms, along with molds and yeasts, belong to their own kingdom - Fungi - which divulged from plants and animals around one billion years ago. While they are eukaryotic organisms, the cells of fungi are enclosed by special cell walls made of a strong material, called chitin, that's also found in the exoskeletons of most insects. Chitin provides the mushroom with structural stability, which gives it the "crisp" feel that chefs love so much.

The mushroom life cycle is similarly unique. The mushroom begins as a tiny spore, which drifts around until it finds a suitable habitat. There, the spore multiplies into a web of long chains called hyphae, which wind through the soil and absorb nutrients. Hyphae can digest organic matter that's both dead and alive, leaving soil that's rich in vital macronutrients, such as nitrogen. These macronutrients feed plants, animals, and everything beyond - in this way, hyphae literally make the world go around.



Some fungi live out their entire lives in hyphae form - for example, mold. Others, however, mature into larger webs of hyphae, becoming a connective network called mycelium. If two compatible mycelial networks run into each other, something new can take place. The mycelium merge their cells into one, producing spores that build up into the fruiting body. This is the solid, stereotypical "mushroom" structure that we see and consume.

But this astounding underground network goes beyond the mushrooms themselves. The mycelium of fungi can also fuse with plant roots, creating what are called mycorrhizal systems.

These relationships defy kingdom boundaries, providing the fungi with sugars and fats that the plants capture, and expanding the plants' ability to absorb key nutrients, as well as to store carbon. That's right - 80% of stored carbon is found underground, in mycelium. Mushrooms play a key role in preventing carbon buildup in our atmosphere.

The most stunning of these mycorrhizal networks is located in the Malheur National Forest in Oregon, an armillaria solidipes - honey fungus - that covers 2,200 acres and is over 2,400 years old, making it the largest living organism on Earth - and one of the oldest. Incredible.

Of course, mushrooms also provide a number of obvious uses to humans. As a vegetarian, mushrooms are my favorite source of protein - they're the closest meat alternative around, and can be made into just about any dish. They're high in antioxidants and fiber, guarding against diabetes, high blood pressure, and even cognitive decline. In China and Japan, they're a standard treatment for cancer, and are used all around the world to enhance immune response.

Moreover, there's hundreds of thousands of species in the kingdom Fungi, each with its own superpower: Amadou starts fires, penicillin was the first antibiotic, rishi prevents allergies, lion's mane induces nerve growth... and psilocybin, of course, makes one heck of a trip. What has taken human technology thousands of years to unlock, mushrooms have had down for billions. Literally, we're eons behind the fungi.

So, whether it be their complex underground networks, crucial assistance to trees and soil, astounding medicinal benefits, or even rich flavor in your soup, mushrooms are perhaps the most versatile and powerful beings that we know of. And, as with much of the natural world, human beings are only just beginning to scratch the surface with our understanding of them.

Magic mushrooms, indeed.



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Check out our website:
www.the28percent.com

Follow the PHS and JMHS teams!

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