

The 28 Percent

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

ISSUE XXIV // APRIL 2023 // HAPPY EARTH DAY!



Art By Makenna Morrisey

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Earth Day

Saturday, April 22, 2023

Earth Day is an annual event on April 22 to demonstrate support for environmental protection. First held on April 22, 1970, it now includes a wide range of events coordinated globally by EARTHDAY.ORG including 1 billion people in more than 193 countries. The official theme for 2023 is Invest In Our Planet.

Celebrate Earth Day by participating in one of the following local events!

Earth Day with Metrolink

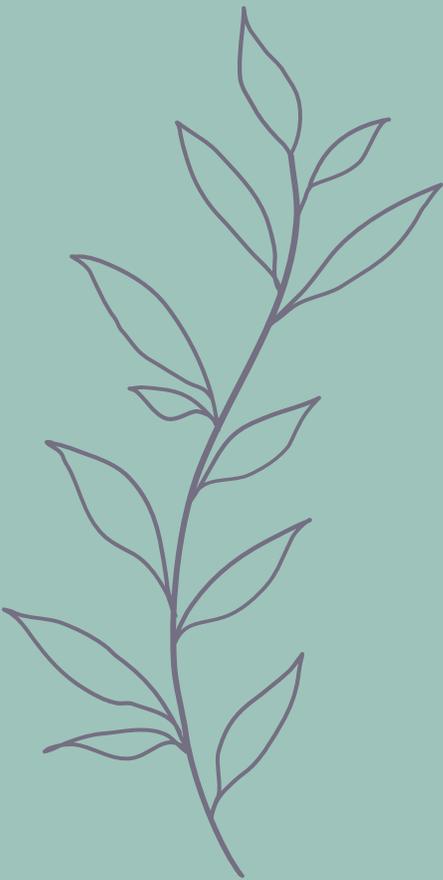
We understand how taking cars off the road can benefit our planet. By leaving your car behind and choosing the train, you're contributing to a healthier Southern California by reducing traffic and your carbon footprint. Metrolink is offering free rides all day on Earth Day, Saturday, April 22 to encourage people to take the train, skip traffic and enjoy a comfortable, convenient and stress-free ride with friends or family. Learn more [here](#).

Earth Day LA River Clean Up

This is a public cleanup that will be held on April 21, 2023, and will start at 08:00:00. They expect around 100.00 volunteers and it'll be hosted by Friends of the Los Angeles River. [Register here.](#)

Heal the Bay Santa Monica Clean Up

This is a public cleanup that will be held on April 14, 2023, and will start at 10:00:00. They expect around 100.00 volunteers and it'll be hosted by Heal The Bay. [Register here.](#)



How Bird Banding Benefits Bird Conservations

By: Morgan Gaskell

There's a lot behind bird banding but at its core, it's the process of putting a band on a bird's leg in order to identify the individual. While bird banding and similar bird-marking methods have been around for thousands of years, modern-day bird banding for research purposes has been around since 1902 and has served as an invaluable tool to a vast array of scientific studies pertaining to birds and environmental conservation. Today, there are thousands of bird banding stations and labs across the United States, with thousands more across the world. Bird banding has been used to track common resident birds in the U.S. like House Finches and American Robins to birds migrating across the country on their way from Canada to Central America like Ruby-throated Hummingbirds.

In the United States, bird banding requires a federally-issued bird banding permit that allows people to handle and mark birds protected under the Migratory Bird Treaty Act of 1916 and is managed by United States Geologic Survey's Bird Banding Lab (BBL). There are many ways to catch birds for bird banding and the kind of trap used depends on the target species, but the safety and humane treatment of the bird can always be assured. Mist nets (32-40 foot long nets with a very fine mesh) are most often used and work great for songbirds and hummingbirds. Larger birds like ducks and raptors are often caught in baited traps.

Bird banders frequently check nets/traps for birds to ensure that the birds don't stay stuck for too long and get stressed. They then carefully untangle/catch the bird, place it in a bag where it can calm down in a safe environment, and then take it back to the banding station where data will be collected.

Bird banders collect a variety of data points, including the bird's species (or subspecies if applicable), age, sex, breeding status, weight, muscle score, fat, molt, and more. The location where the bird was caught and the date are also important. When put all together, bird banders can determine a species' lifespan, survival rate, dispersal and migration, behavior, reproductive success, and population growth either at a specific location or contribute findings to determining the species' health as a whole.

Most birds leave the banding station with an aluminum band that has a unique set of numbers on it. This way, if the bird is ever caught again, banders and researchers are able to add onto the data that was collected for the individual the first time. Color bands are sometimes used in addition to aluminum bands. When put in unique sequences, they allow scientists to study individual birds without having to catch them again. Not all birds can be (easily) banded though. For instance, banding hummingbirds requires another permit and extra training because the band is basically a thin sheet of aluminum that needs to be hand-rolled on-site. Gamebirds like quails are also not banded.

The data collected by bird banding stations can be used in a variety of ways. For instance, data points like muscle score, fat, molt, and flight feather wear are of special interest to migration studies and help

scientists determine the health conditions of birds arriving on migration grounds or rest stops during their journey.

When banding stations band a migratory bird, there is a chance that that bird can reach another banding station, allowing for a migration route to be established. When migratory birds are recaptured at the same banding station after some time, researchers can determine what migration routes and habitats that bird favors. Breeding status is often used to determine how well resident birds in an area are able to rebound from ecological disasters such as fires, flooding, and droughts. Banding data can also be used to determine age and the lifespan of a species. The world's oldest bird is a Laysan Albatross named Wisdom who was banded in 1956 after she had laid an egg on Midway Atoll. Now at least 71 years old, we can determine that the the lifespan of this critically endangered species can reach such high numbers.

This all has tremendous use in bird conservation. When it comes to migratory species, it is crucial that we know what species and what individuals are going where in order to determine how to conserve each destination along the way. This can require cooperation across countries, but is key if we want to ensure the survival of migratory birds. Color bands are often used to track individuals of an endangered species. One example of this is the Island Scrub-jay, whose numbers on Santa Cruz Island have been falling due to habitat loss and overgrazing by human-introduced feral sheep. Wild birds may also be sampled for diseases like Lyme and avian influenza while at banding stations, which can help scientists identify a disease's prevalence while also alerting human and animal communities that may be at risk of infection. The U.S. Fish and Wildlife Service will also use banding data from

game bird species to establish hunting regulations each year based on how healthy and strong a population is to ensure sustainable hunting practices. Bird banding isn't necessarily just benefiting bird conservation either. Carolyn Coyle, a student at Colorado State University, is having some banding stations collect pollen samples from specific bird species for her master's thesis. This pollen is then analyzed to determine plant species and what roles birds play in plant pollination. This can help to determine what plants need to be protected to prevent the further decline of bird species in future years.

Bird banding data has supplied scientists and the general public with a vast wealth of knowledge over the years and will continue to prove useful in both scientific and environmental conservation efforts. A bird entering a net or trap and data being collected at banding stations may seem like small actions, but it can have huge implications in a variety of fields. If only the birds knew the importance and beauty of their new piece of jewelry.



Feminist Environmentalism: A Package Deal

By: Paulina McConnell

When you think of climate change, it's probably polar bears or angry hordes of vegans that come to mind. What's excluded from the picture is a newer term, but one which is vital to our understanding of combatting the climate crisis: feminist environmentalism.

Global warming, believe it or not, is inherently patriarchal. A new Swedish study reveals that, on average, men's carbon footprint is 16% higher than women's. Moreover, the top 1% of earners are responsible for more carbon emissions than the bottom 50% - and unsurprisingly, this top 1% is almost entirely male, heterosexual, and white (International Energy Agency).

Despite this blatant disproportionality, it is not these men who are impacted the most. The UN reports that, of the millions displaced by climate change each year, 80% are women. Women are less likely to survive natural disasters because of the systemic inequalities in information distribution, mobility, and access to resources.

For instance, in developing nations, most women work in agriculture. When natural disasters or sporadic weather are brought upon by climate change, the difficulty and pressure of their jobs intensify, and girls are often pulled from school to assist their mothers. If a woman fails to complete her job due to these environmental challenges, she will likely face severe punishment.

It is through these operations that, as the temperature of our earth rises, so do sexual abuse, domestic violence, child marriage, and human trafficking.

Climate change also poses threats to maternal health. The risk of stillbirth - a child dying in the later stages of pregnancy, or during childbirth - is worsened by extreme heat.

The environmental crisis is often labeled as a 'threat multiplier', meaning that when climate change worsens, so do other world issues and injustices. This is where intersectionality comes into play. Humanitarian services often fail to account for the fact that migrant women, Indigenous women, Afro-descendant women, and LGBTQIA+ folks are more susceptible to the challenges posed by climate change.

'The thing about the climate crisis is that it affects everyone on Earth, and it can affect some groups more than others due to social injustices,' explains Morgan Gaskell, a junior at PHS.

They provide me with a longstanding example: 'Factories that burn fossil fuels now are often located in low income communities, poisoning the people living there and leading to increased risk of developing deadly diseases such as cancer.' These communities are usually composed of people of color and immigrants, pointing to clear environmental racism.

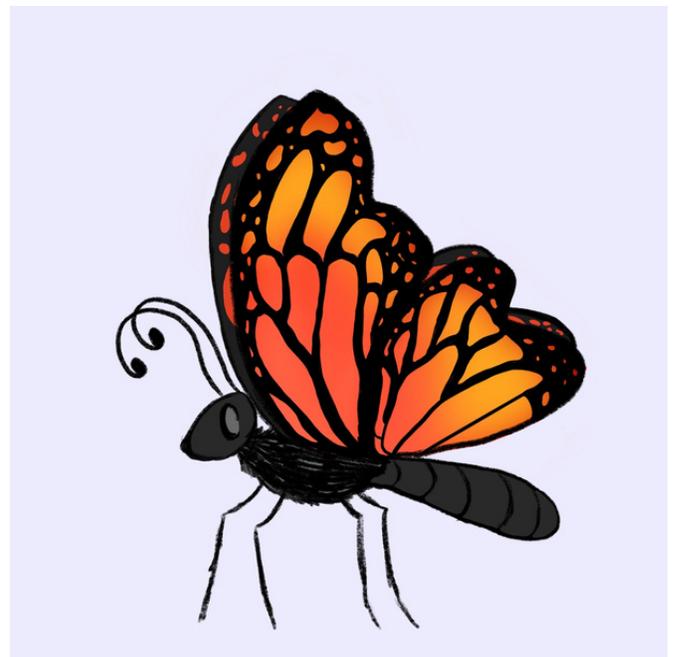
As unsettling as it is to realize these connections between climate change and systemic bias, understanding their dualities are vital to defeating both.

'We cannot look at the climate crisis in a vacuum, because it affects so many aspects of human life and can be exacerbated by social injustices present in our society,' Morgan emphasizes.

The good news is that, across the globe, women and those affected most by global warming are spearheading the climate movement. Unfortunately, when it comes time to make major decisions, the veto is often still left to the affluent white male.

How can we move past this one-sided, patriarchal approach to the climate crisis? After all, in saving our planet, is the goal not to create a better world? One in which everyone can prosper?

Tale as old as time, we must work together on every front if we wish to combat climate change. In doing so, it is imperative that we elevate the voices of those impacted the most. Then, and only then, will we truly reach a solution.



Created By Alissa Santana

The vibrant feathered Honeycreeper is native to the islands of Hawaii, Maui, and Kauai and has a primarily nectarivorous diet. This means the birds like to feast on the flowers of native fruit trees and plants like the 'ōhi'a lehua or Hawaiian Lobelioids. With their curved beaks, they can collect nectar from these flowers and spread the seeds of these plants across the elevated mesic and wet forests they inhabit; they are one of Hawaii's most important pollinators. Hawaiian honeycreepers are closely related to finches and have a spectacular variety of colorful feathers. Not only do these birds help their environment flourish, but they are also crucial to the culture of Hawaii itself. They are considered spiritual guides for families, and their feathers have been used in clothing and accessories as a symbol of power for centuries.

Originally, over 50 species of honeycreepers covered the mainlands of Hawaii. But when settlers brought non-native species to Hawaii in the 19th century, avian malaria from mosquitoes began to plague these birds. Now, only 17 species remain, with less than 200 individuals in total. New predators have also affected these populations such as cats, rats, and mongooses. Grazers like pigs, sheep, deer, and goats contribute to habitat destruction, causing a food shortage for honeycreepers. In the past, these colorful pollinators have been able to avoid disease because both species favor different climates. Honeycreepers reside in colder, elevated areas while mosquitoes prefer warmer territory. Climate change has been pushing the colder areas higher upslope and allowing mosquitoes to adapt to new temperatures while simultaneously pushing honeycreepers out of their habitats. This has led to an extreme outbreak of avian malaria in Hawaii's native birds. Laboratory research has shown that 90% of birds bitten by malaria-infected mosquitoes don't survive, which has made it difficult for rehabilitation.

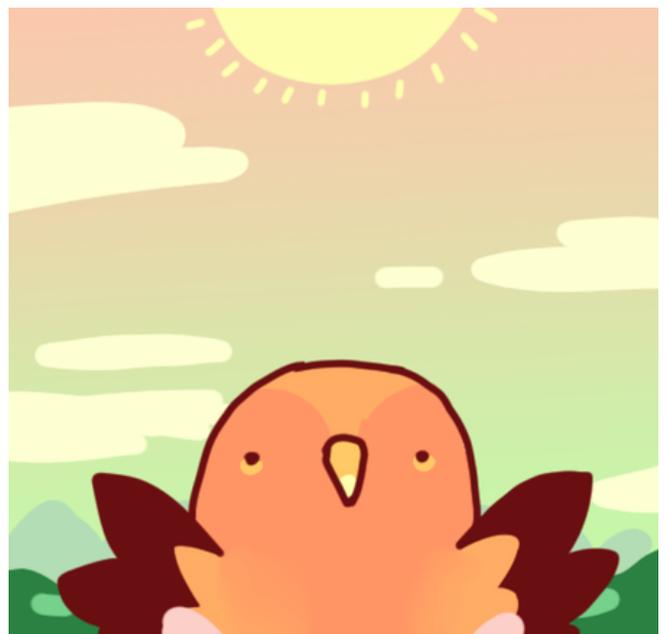
Past relocation and captive breeding efforts in Maui for Kiwikiu honeycreepers failed due to exposure to mosquito populations.

In 2022, President Biden's Bipartisan Infrastructure Law invested \$14 million into the restoration of Hawaii's ecosystem. Quite a few organizations are taking action with these funds, such as the Department of the Interior. The DOI is currently making annual investments to restore habitat connectivity, advance habitat restoration, and control invasive species.

Endangered Species Spotlight: Hawaiian Honeycreeper

By: Kaley Simkins

They are collaborating directly with tribes and local communities to make sure their endeavors are most effective. The Department of Land and Natural Resources is another crucial organization to shout out. Using non-compatible mosquitoes on a landscape-scale basis, they plan on developing effective mosquito management for the Hawaiian Islands. They are also in the process of developing more captive propagation facilities at the San Diego Zoo Wildlife Alliance's Maui Bird Conservation Center. This will provide the birds with a safe space to breed in captivity. The U.S. Fish and Wildlife Service has gifted the DLNR \$6.5 million to fund their projects.



Created By Cecelia Bichette

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