



# The 28 Percent



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

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Art By Makenna Morrisey

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# CALTECH SUMMER PREVIEW

## WOMEN IN STEM



- **Are you a woman or non-binary rising high school junior or senior interested in taking your passion for STEM to the next level?**
- **Does the prospect of solving the world's toughest scientific challenges motivate you?**
- **Are you interested in learning what makes Caltech a place uniquely designed to produce the world's best and brightest innovators and researchers?**

*WiSTEM is a free, one-day program for non-binary and woman-identified rising high school juniors and seniors who are interested in learning more about what Caltech has to offer. Ultimately, we hope students leave with an increased understanding of whether Caltech is a place they can see themselves learning and growing through their college years. We will also showcase the exciting frontiers that Caltech women are exploring in the STEM fields, such as 2022's keynote speaker, Dr. Katherine L. (Katie) Bouman, whose research recently helped generate the first image of a black hole at the center of our galaxy.*

*Save the date: Women in STEM (WiSTEM) will take place August 2-4, 2023.*

### **Registration**

*[Register here](#) to receive information as soon as it's available.*

# Endangered Species Spotlight: The Red-crowned Parrot

By: Kaley Simkins



If you live in Pasadena, you have probably heard the loud screeches and calls of these parrots in the early hours of the morning. Though the Red-crowned parrot has many feral populations across the U.S. (California, Texas, and Florida), it is native to the dry fields and lush forests of Northeastern Mexico. These vocal birds mostly eat the seeds and fruits of tropical plants. They tend to forage inside the crowns of trees and spend most of the year in large flocks, flying out at dawn. With their deeply curved bills, they grab onto branches and balance while moving from limb to limb. The average lifespan of a red-crowned parrot in the wild is 20 years, but they can live up to 50 or even 75 in captivity! Their broad and rounded green wings can carry them to speeds as fast as 27 miles per hour. Like many species of birds, these parrots pair for life. They can communicate a large variety of messages with their partners and even use coordinated vocal duets to protect their nesting sites from invading pairs, which are usually located in natural tree cavities. While it may seem like we have plenty of these parrots in California, there are less than 2,500 individuals left in the wild and their population is actively decreasing.

Their vocal nature makes them more vulnerable to trapping and capture. The parrots have a tendency to communicate close to their nesting sites, which makes it easier for poachers to find them.

Additionally, poachers searching for nestlings often destroy the nest tree in the process, creating further damage to their habitats. There was a brief period when more than 5,000 birds were exported annually to illegal pet trades. Other threats include droughts, which diminish sources of food and water, wildfires, and urbanization. Lastly, heatwaves occurring in the spring can prove fatal to young parrots in nests. These birds, like many others, are not spared from climate change.

Currently, the American Birds Conservatory and the Rio Grande Joint Venture are helping to coordinate monitoring efforts for red-crowned parrots in Northern Mexico. The teams are managing quarterly surveys in South Texas and will soon begin to conduct surveys in Mexico. Furthermore, they are currently seeking support for the development of a conservation and monitoring plan, close to the parrots' native habitat. I hope as a community we can appreciate the red-crowned parrot even more, and be thankful we can call such an amazing bird a part of our city.

# Dating Techniques in Archaeology

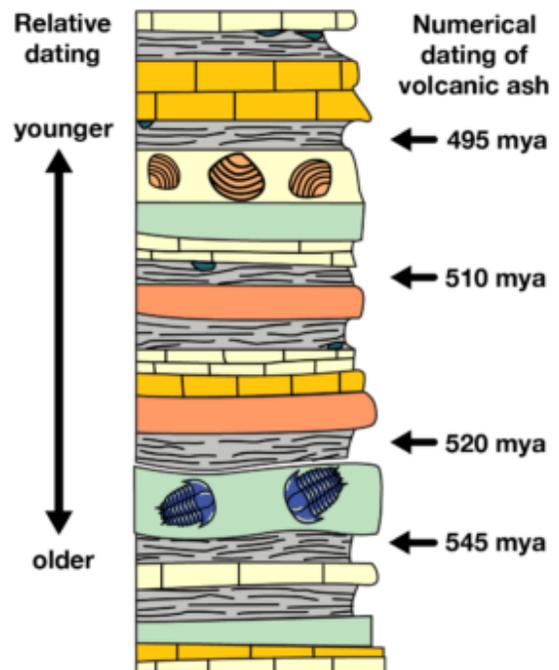
By: Emma Hungerford

Carbon (also called radiocarbon or C-14) dating is a scientific technique that is often used to estimate the age of artifacts, often during archaeological excavations. When a plant or animal dies, it stops absorbing carbon, but the carbon it had absorbed before it died continues to deteriorate. Using this information, scientists have the ability to date artifacts made from wood and leather, as well as hair, pottery, bones, parchment, wall paintings, and soil or lake mud. Artifacts that are pottery or parchment can only be dated, however, if there is some sort of natural residue on it, such as mud. It should be known that the technique only really works for things younger than 50,000 years old. Though, on the plus side, C-14 dating has a margin of error of only two to five percent, making it pretty accurate.

There are several different types of dating, two of which are relative and absolute dating. Relative dating techniques allow someone to know how the age of one artifact compares to another, while absolute dating techniques show a specific year, rather than comparing it to something else. For example, carbon dating is an example of absolute dating. It provides an estimate of a year from which something is from.

An example of relative dating is fluorine dating. Fluorine dating measures the fluoride that has been absorbed by bones. Since bones that are buried absorb fluoride over time, you can determine which bones are older and younger. If one skeleton has a higher fluoride concentration than another, the one with the higher concentration is most likely older.

There are many different scientific techniques used to help scientists and historians achieve a deeper understanding of the artifacts they find. There is always new technology being developed, whether it be robots to help underwater, protein analysis techniques to understand diseases, or imaging tech to reveal the colours of statues and artifacts from long ago.



# CREDITS & CONTACTS

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**Check out our website:**

**<https://msorret.wixsite.com/onlineclassroom/women-in-stem-newsletter>**

**HAVE QUESTIONS? WANT TO GET INVOLVED?  
WANT TO BE FEATURED IN A FUTURE NEWSLETTER?**

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