THE 28% CLUB

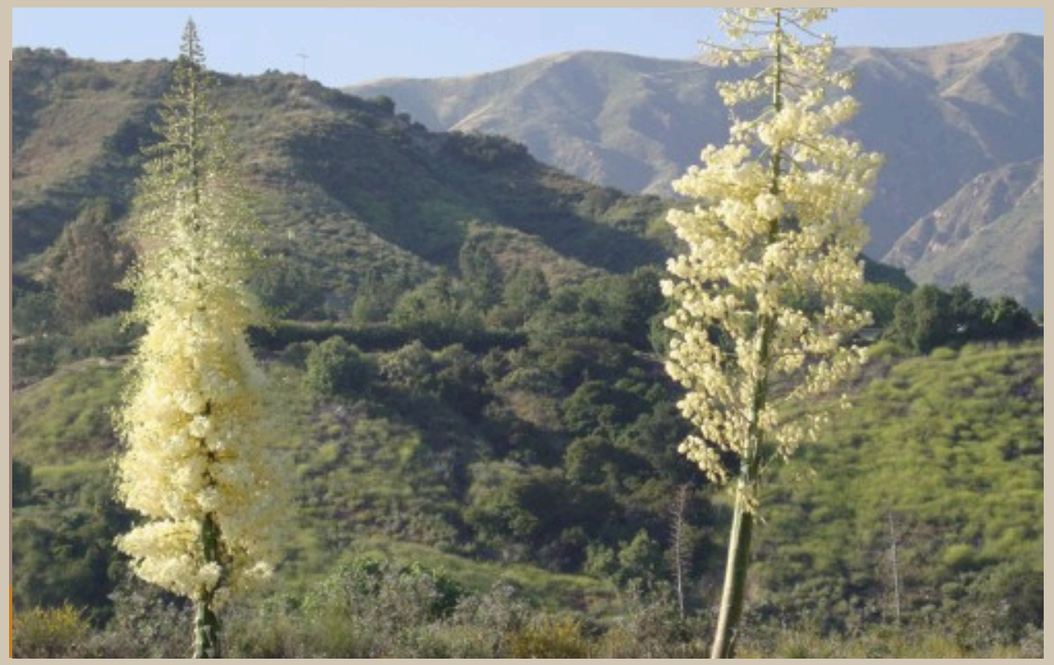
Women make up only 28 % of the STEM workforce. This newsletter aims to change that.

11.2024

Table of Contents

By Paulina Mcconnell

The Chapparal Yucca: More Than a Plant



It's easy to look at a plant and think it's just, well, a plant.

Take the chaparral yucca, for instance. With a crown of green spears and cream-colored blossoms shooting up out of the ground, this native is a fan favorite here in Pasadena. If you're anything like me, you'll take a quick glance at the yucca and think, "Wow, nice leaves!"

But the yucca is so much more than a pretty face.

Like dozens of other California natives, yucca is food - and not just for the sparrow nipping at its white blossoms, but for us. That's right: just like the lettuce and berries we buy at the grocery store, many of the plants we come across while hiking are fully edible. This diverse collection of sages, grasses, and many other families is nicknamed the "California edible landscape." Dating back thousands of years, many Native Americans - here, the Tongva people - used these plants as a key part of both their diet and culture.

As mentioned above, our local chaparral yucca - hesperoyucca whipplei - takes the cake when it comes to providing a variety of foods and resources. The tastiest part of the yucca is its heart, which the Serrano Indigenous people of the San Bernadino and San Gabriel valleys were well-known for preparing into a dessert.

The heart is best served baked (traditionally in a stone oven) for hours on end, a process that releases a sweet, molasses-like taste. The parts of the heart not eaten can be ground up as a sweet meal and stored for months.

But an edible heart isn't the only trick the yucca has up its sleeve: the flowers, stalk, and even seed pods are all also edible. When they bloom early in spring, the flowers can be used as a slightly bitter topping on a salad. And when the plant dries up in harsher weather, the contents of the brown seed pods can be ground up into an edible grain. The yucca is really special in that it can provide food during not just one season, but year-round!

Even the yucca's leaves provide a critical and unique resource: nature's soap. By roughing up the leaves and mixing them with water, the saponins (a toxic, but soap-like chemical in yucca fibers) in the leaves are released and can wash dirt or grime off your hands surprisingly well.

I actually tried this process at home, harvesting a single leaf from a yucca on a nearby trail in Altadena. First, I bent the leaf back and forth, crumpling it up in my hand to loosen the fibers. The next step made my fingers hurt a lot, but was essential in exposing the saponins - those soap-like molecules - to the water. I used my nails to scrub away at the outer layer on as much of the leaf as I could. Once I had exposed almost all of the leaf's inside, I dumped the leaf in a bucket of water, and began to scrub it back and forth between my hands.

After about 2 minutes, my hands were finally covered in frothy green bubbles! I washed and rinsed as normal, and was honestly really impressed with how clean - and soft - the yucca had made my hands.

All in all, I absolutely recommend this process if you're looking to connect with your local ecosystem. Knowing how to harvest, eat, and utilize such an abundant plant is a vital survival skill, and the process helped me appreciate both the yucca and the Indigenous knowledge that contributed to its use.

By Kayley Simkins

Endangered Species Spotlight: Margay

The margay is often mistaken for the ocelot, the most dominant small feline of the rainforest, but it differs in many ways. Margays are slimmer and shorter than ocelots, also bearing longer tails since they spend more time in trees; their tails take up 70% of their body length, which is crucial for balancing on high branches in their forest habitats. The margay's distribution range extends from Central Mexico through South America, predominantly among the evergreen and deciduous forest habitats. It's hard to get an exact count of the margay population because of their dispersed and solitary behavior, mainly due to their arboreal* lifestyle.

Another characteristic that sets them apart from other jungle cats is their ability to rotate their feet 180 degrees outwards, which combined with their mobile toes, allows them to hang from branches by their hind feet and descend trees head first.

The margay's impressive agility allows them to jump 8 feet straight into the air and 12 feet horizontally, which is helpful for evading predators and traveling through the forest. Primarily hunting at night, these nocturnal felines prey on small rodents, birds, and insects. Margays often stray from regions with ocelot populations to avoid predation threats.

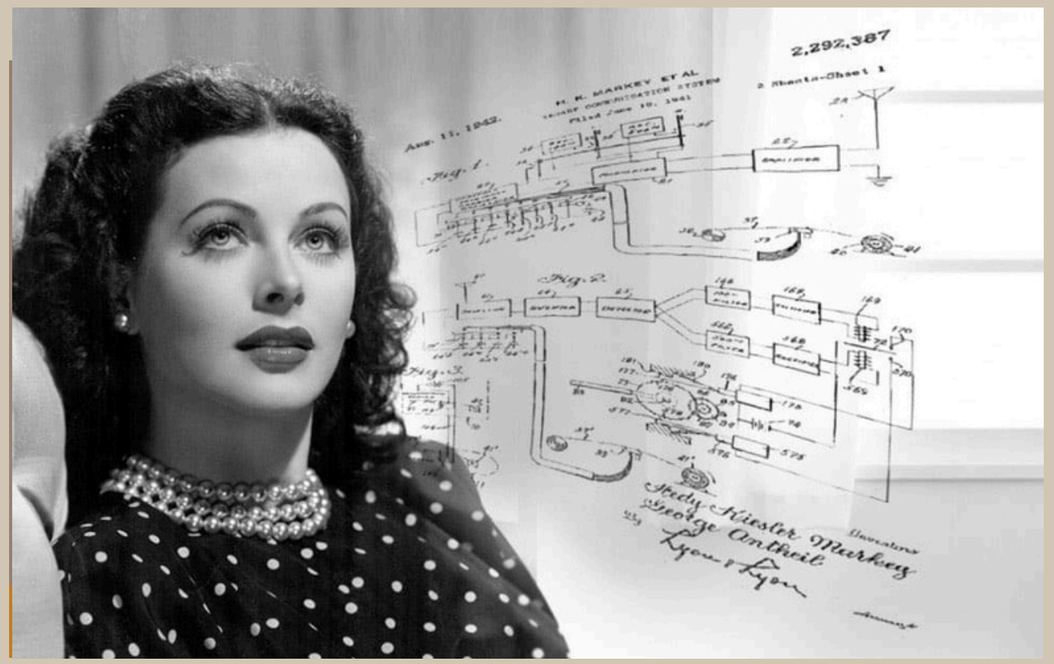
If in the same area, ocelots will push out or even kill the smaller cat to eliminate any competition for prey.

One of the most pressing threats to the margay population is the deforestation of their natural habitat. Rainforests in South America are being converted to agricultural sites, stripping margays of their already limited space and disrupting their hunting system. The nocturnal jungle cats are additionally exploited for trade, with more than 14,000 being hunted annually for their pelts. In the 1970s and 1980s, an astounding 125,000 pelts were illegally traded globally. Margays struggle to keep up with population decline due to their naturally low birth rate, only reproducing once every two years with an average litter size of 1-2 kittens.

The Grupo Ecologico Sierra Gorda I.A.P, the founding organization of the Sierra Gorda Alliance in Mexico which works to improve the community and protect the environment, is one group funding for the protection of small feline species and their forest habitats. The communities within the Sierra Gorda reserve are losing their most vital resources due to climate change and urbanization, and without alternative income opportunities, landowners resort to illegal logging and hunting. This community-driven organization works with the locals to encourage sustainable livelihood and engage them in environmental protection, providing them with compensation when undertaking conservation activities. These activities may include regenerating damaged habitats, creating sustainable alternatives to logging, hunting, and high-impact ranching, and investing in community micro-enterprises. They have raised $46,000 so far, aiming for a total of $75,000.

By Benjamin Blakeslee

Inventions by Women: Hedy Lamarr Inventor of WiFi



he woman who created the basis for some of the most commonly used aspects of today's technology. The Austrian-American actress and engineer was born on November 9th 1914. She continued her acting career while also pursuing engineering. Engineering started to take up more of her life when the U.S. was brought into World War II. She helped develop systems that were used to protect radio transmissions from being intercepted by the Nazi's. Much of her inventions and contributions in innovations of technology helped defeat the Nazi's.

woman who created the basis for some of the most commonly used aspects of today's technology. The Austrian-American actress and engineer was born on November 9th 1914. She started her career as an actress in her teenage years. She later got married but not for long. Her husband Fritz Mandl was a wealthy Austrian manufacturer who sold weapons to the Nazi's. After their marriage ended she fled to the United States. She signed a contract with the Metro-Goldwyn-Mayer studio in Hollywood. On top of her groundbreaking feats as an engineer she was still able to be a very successful and famous actress.

Many of her movies are still popular and well known to this day.Some of these films include, "Lady of the Tropics", "Samson and Delilah", and "Tortilla Flat".

Hedy Lamarr was able to help. Later in life she invented something that would later be used as the basis of what we use in modern technology today.

This was the early technique for spread spectrum communications. This was later used to create wireless communication, WiFi, Bluetooth, and GPS. Her work was revolutionary in the making of how we use technology today, as well as how we communicate with each other and the outside world. Present day WiFi is used everywhere as it is necessary for our modern day technology. For example, in schools students now use online work instead of on paper textbook work to further optimize and improve efficiency of the completion of school work.

The idea that the basis of what we use everyday was invented by the Austrian-American actress Hedy Lamarr, was unknown until recently. Her work was seen as revolutionary, and as a discovery that altered the future of the world. In 2017 a movie director discovered Hedy Lamarr's work and shined light on it in her documentary Bombshell: A Hedy Lamarr Story. This also brought more people's attention to her part in the creation of WiFi and other technological inventions.

The aspects of technology that Hedy Lamarr helped create has become a part of our world that is necessary for every person who uses some kind of interaction with a device at some point in their day. In schools, work places, and more, WiFi is necessary for the function of most all technology. From what we use to do work, communicate, and even to read this article. It all requires the one thing that was invented by Hedy Lamarr.

Credits & Contacts

Pasadena High School Team

Paulina Mcconnell
Maxine Scott
Mallika Sheshadri
Kaley Simkins
Camila Matthews
Lila Stevens
Ms. Orret, Advisor

Jadyn Addicott
Avery Aldoroty
Gianna Gullon
Emma Thatcher
Olivia Lopez
Maddie Kornman
Matea Migake-Trapp

John Muir High School Team

Ariana Soto
Cara Martinez
Imani Duran
Ms. Beverly, Advisor

Alumni

Margaret Matthews
Chloe Vuong
Tracey Willard
Makenna Morrisey
Emma Hungerford

Madeleine Lees
Celeste Acosta
Adeline Peterson
Alissa Santana
Cecelia Bichette

Jaidyn Carroll
Violet Chandler
Ruby Chew
Morgan Gaskell

Check out our website:
www.the28percent.com

Follow the PHS and JMHS teams!

@28_percent

@jmhs.girlsbuild