BLAZE
ECOLOGY OF FIRE
by LOUISE BEAN

FAMILIAR FORESTS TURNED INTO CHARED ALIEN LANDSCAPES.

Picture a blazing wildfire. How does it make you feel? Scared? Nervous? Angry?

As the planet experiences increased global temperature and droughts, fire touches more lives than ever before. In the US, it makes sense that we devote our time and resources to preventing and suppressing fire to avoid the heartache and human cost of fire's devastation.

But what if our fear of fire actually made it worse? It's time to forget what we know about fire for the future of our forests and grasslands.

HUMAN LIVES HAVE BEEN SHAPED BY FIRE FOR AS LONG AS WE HAVE WALKED THE EARTH.

Can you think of a folktale, story, or myth that includes fire? Does your family or culture have any traditions that involve fire, flames, or candles? What concepts do you associate with the symbol of flames in art?

Unlike in the Western culture today, ancient humans probably wouldn't have seen wildfire as an exclusively destructive phenomenon but may have appreciated their constructive impact and usefulness to developing human technologies and practices.

Early hominids probably relied on fire to start forest fires so that they could collect burning coals and sticks to cook food and clear land. The protection and warmth of sitting around the fire helped build community bonds.

Fire has become central to the social and spiritual life of humans in a way that endures into the present. Sit around the fire and listen to storytellers spin tales about fire.

FIRE ECOLOGY
THE STUDY OF PROCESSES LINKING FIRE AS A NATURAL COMPONENT OF AN ECOSYSTEM

Fire effects the species diversity and structure of an ecosystem

SPECIES DIVERSITY
The number of different species supported by an ecosystem and how abundant each one is.

STRUCTURE
Organisms and physical structures in an environment including the distribution of nutrients.

While fire may seem like an entirely destructive, it can actually aid in the overall health of an ecosystem.

- Clears the upper levels of the forest to allow changes and growth in the understory by creating open sun-lit landscapes
- Clears old, dead, and decaying plant matter
- Enrich the soil with carbon by recycling dead plant matter
- Clear away fire intolerant species to make space for fire adapted species

SOME ECOSYSTEMS NATURALLY FIRE AFFECTED, MEANING WILDFIRE IS A PART OF THE LIFECYCLE OF THE ENVIRONMENT.

FOREST MANAGERS NOW UNDERSTAND THAT WITHOUT WILDFIRE, MANY KEY FOREST SPECIES OF BOTH PLANTS AND ANIMALS WOULD DISAPPEAR.

CLIMATE CHANGE + FIRE

Climate change disrupts the balance of fire adapted ecosystems by altering the fire regime of the area. Higher temperatures create drier conditions in forests with milder winters and longer fire seasons. Warmer winters are less likely to cull populations of pests like pine beetles that kill large numbers of trees, thus creating even more dead and decaying fuel. Wildfires release carbon into the atmosphere which overtime compounds to worsen the effects of climate change by accelerating overall temperature increases.

When these ecosystems are unable to recover from catastrophic fire, they cannot act as the important carbon sinks that absorb and store carbon emissions.

How we can work to curb the effects of catastrophic wildfires

1. Build and rebuild communities away from historically fire suppressed ecosystems to avoid accidental human caused ignition and limit lives lost and property damage.
2. Recognize increasing severity of wildfire as a symptom of climate change that can be best addressed by grasping the issue at the root and reigning in global greenhouse gas emissions
3. Supporting prescriptive burn regiments where appropriate and supporting indigenous rights to practice cultural burning practices.

INDIGENOUS COMMUNITIES ALL OVER THE WORLD HAVE USED THE REGENERATIVE POWER OF CONTROLLED FIRE ON HUNTING AND FOOD GATHERING GROUNDS FOR CENTURIES.

Native communities cultural burning practices reduce fuels and keep more dangerous wildfires at bay by slowly burning extra fuel on the forest floor while still keeping the blaze contained. They also cultivate fertile forests and grasslands to feed communities.

Upon arriving in the Sierra Nevada, Spanish colonizers commented that the forests appeared like "a well tended garden", yet took for granted that then entire structure of the ecosystem was stewarded entirely by native residents, largely with the help of fire.

When European colonizers encountered native burning practices, they did not understand that fire was a key regenerative feature of the health of North America's ecosystems.

EUROPEAN PERSPECTIVE
Suppress natural fire cycles to cultivate crops of a single non-native species.

INDIGENOUS PERSPECTIVE
Use controlled burning practices to regenerate the land and sustainably harvest resources.

1871
PESHTIGO FIRE
bolsters arguments by timber companies to log the land without opposition

1880
CALIFORNIA OUTLAWS ALL INTENTIONAL BURNING
via the Act for the Government and Protection of Indians

1905
US FOREST SERVICE ESTABLISHED
to "provide quality water and timber for the nation's benefit" with a fire suppression agenda

1910
"THE BIG BLOWUP"
3 million acres in Montana, Idaho, and Washington burn in only two days, spurring the Weeks Act of 1911 that authorized federal states to suppress fires

1935
10 AM POLICY
Forest Service states all fires must be put out by 10 am the next morning after report

1944
SMOKEY INTRODUCED
Forest Service created Smokey Bear to educate the public on fire prevention policy to the public

1960s
BIRTH OF FIRE ECOLOGY
Mainstream ecologists like Howard Biswell model of fire suppression in the US was counterintuitively doing more damage to the forests than wildfire

1968
YELLOWSTONE FIRES
36% of park land affected by multiple wildfires often first case for "let it burn" policy

1972
"LET IT BURN" POLICY
The National Parks Service adopts policy to let naturally ignited fires burn in wilderness areas

1990s
WORSENING FIRE
Remaining prevention and suppression budget accounts for 52% of department budget, limiting resources for other management

CULTURAL BURNINGS

Called thus not only because of their spiritual and communal significance to native tribes, cultural burnings also cultivate a diverse culture of plant life that makes these ecosystems more resilient and sustainable.

Burning practices are passed down from generation to generation, specifically addressing the regeneration and cultivation of game or plant species and even waterways.

The goal of cultural burning is to facilitate the natural reproductive cycles of the specific ecosystem.

BURNS AND BASKETS

In Northern California, traditional baby baskets of the Yurok and Karuk tribe are made out of hazelnut shrub stems that are collected after cultural burns. Only these stems are deemed sturdy enough to support the weight of a baby but do not support the weight of the adult who has to bend down to harvest it through burning the shrub itself.

Examples of specific species cultivation such as these baskets highlight what sets cultural burning apart from other planned burning practices. Cultural burning is a form of anthropogenic burn by limiting fuels these practices rejuvenate the land for sustainable use.

Many native tribes of the Western US describe cultural burning practices as an act of generational hope, stewarding an ecosystem not for short term gains, but long term sustainability in to structure and cultivation of the land.

OFTEN OVERLOOKED GRASSLANDS HAVE EVOLVED WITH THE INFLUENCE OF FIRE.

Grasslands are a pervasive ecosystem and cover 40% of the planet. How could a plant as small as a blade of grass out compete something as large as a tree?

While more trees are very susceptible to damage by wildfire, grasslands embrace it. While many look to forests as the biggest carbon sinks, or entities that absorb carbon from the atmosphere, storing 1/3 of the Earth's carbon. Grasses often have root systems that extend 6-20 feet into the soil. Thus, carbon is stored deep in the ground where it won't be released when burnt as might happen with a tree in a forest.

If fire happens too frequently, then species may not be able to reach a mature and fire resistant age and will be eradicated. If fire happens too infrequently, than fire adapted plants may be crowded out by faster growing fire intolerant species.