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The officers and editor of The Naturalist newsletter are proud to include content that is not the usual focus of the natural world. Social awareness is imperative to all aspects of interpretation. As you read this newsletter, we hope that you seek greater understanding, raise your awareness of uncomfortable issues, and be a part of the solution to making the world a better place for mankind as well as nature. Thank You to all the wonderful contributors who helped make this an amazing issue.
Well...gosh... Things are a whole lot different than the last time that I wrote a note to the IN Section. Many of us are suddenly faced with a summer of not working, after having been self-isolating for the past few months already. Many others are seeing their sites starting the re-opening process, but with many new procedures and standards and restrictions. And some of us have been working all along, albeit from homes and non-traditional work spaces. I think I can safely say that all of us have had to adapt in some way to the changes in the world today—and I hope that you are all doing okay. Please remember that you are not alone and that many people are going through similar things to what you might be going through right now—reach out to friends and family and colleagues. One thing I can definitely say about interpreters is that we are a caring group of people and we will do whatever we can to help others.

I know that our newsletter editor, John, has some great things planned for this newsletter, so I don’t want to drone on and on about too much of “the new normal” (yes, I am growing tired of that phrase, but sometimes it is the best thing to say). But, I do want to say that I want all of our members to feel welcome and part of the IN Section, and if there are any issues or challenges that you see or feel, please reach out to me or any of our officers and we will do what we can to help. We are a diverse group and

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We need your help. Contact John Miller at interpretivenaturalist@gmail.com if you would like to be a representative for your region!

The Naturalist is published quarterly by the Interpretive Naturalist Section of the National Association for Interpretation (NAI). It is published on each equinox and solstice. Articles are welcome anytime. The NAI mission is to inspire leadership and excellence to advance heritage interpretation as a profession. Visit: www.interpnet.com for more information.
From the Trail (continued)
I want all of our members to feel heard. We wouldn’t be the IN Section without all of you!

As we do navigate the re-opening of many of our sites, I am interested to hear what some of your new operational practices are. We are kind of “standard ops” at my site, but I don’t see a whole lot of visitors on a day-to-day basis. Lots of extra cleaning and separation of personnel, although we could probably do better.

So far, I haven’t really visited any parks or interpretive sites, but I have heard stories of limiting visitor numbers at any one time—how has that worked for you? My ski season got cut short this year (like all skiers) and a few places opened up a few weeks ago with limited numbers of people allowed to be at the resort each day—it has made me think about how skiing will be next year. And it makes me think about the certainly fewer numbers of visitors at our sites—while it may be a bit of a relief to not be bombarded with thousands of visitors each day, I know it also affects revenue. And, as much as we don’t want to think of it this way, we have to bring in money to pay our staff. I am worried about the news articles I have seen about so many museums, zoos, parks, etc. that may not be able to weather the “COVID-storm”. What a shame it will be if that comes true—not only for us as interpreters but for our visitors.

I have always been a person who tends to think positively, so am I going to just keep on doing that—we can and will weather this storm. Our programs and sites may not look the same, but I truly believe that our interpretive sites, museums, parks, zoos, natural areas of all kinds are important to the public and will continue to be so. We may have a bit of a downturn, but we will come back. I know that not all of our sites will make it, but I believe that a majority will; and I hope for the rest that it is just a short “time away”. We do an incredibly important job and I think the public recognizes that. With things changing in the world these days, I hope that that importance gets better recognition from those who fund our sites and keep them open. Don’t give up hope—I’m not.

Tell Your Story
Interpreters come from all walks of life, and we take all sorts of unique paths to this career. Our “Faces of NAI” video series will highlight the diversity of backgrounds, career paths, and interests represented in the field of interpretation. To see yourself featured in this series, which will be shared on social media and the NAI website, please send your video according to the following parameters to pcaputo@interpnet.com.

Duration: 2 minutes
Format: Digital video file such as .WMV, .MOV, and .MP4 (Phone cameras work well, but please shoot horizontally, not vertically—and be wary of the effects of wind on audio!)
Please include the following:

• Your name, title, and place of work
• How you got into interpretation
• What the field has meant to you
• Anything else that makes your story unique!

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Diversity, Equity, and Inclusion

A Statement from NAI

Diversity, equity, and inclusion are core to the mission of the National Association for Interpretation (NAI), an organization dedicated to advancing the profession of culture, heritage, and nature interpretation.

We are heartbroken at recent incidents of systemic injustice in our nation, and at the pain events happening across the country have caused in our communities. The senseless murder of George Floyd in plain sight has elicited raw emotions, and highlighted inequities that plague us. Hatred and racism have no place in our society, and it is our responsibility as interpreters to use our voices against them.

We have been issued a challenge and it is time for us to rise up as a nation and meet it. We must challenge our own preconceptions. We must challenge ourselves to make the world a better place through our work as interpreters and the choices we make as individuals.

We have the power to effect positive change. It begins inside all of us, and it takes place through action. Interpreters are uniquely positioned to help grow understanding and begin to heal a broken nation. The lessons we convey at historical sites help us to learn from our past—to see where we’ve come from and where we can go from here. Our cultural sites help us appreciate each other, the beautiful diversity of thought and music and art that has the power to make us whole. And our natural sites offer the opportunity to heal, to reflect on the beauty that surrounds us.

Interpreters have the opportunity to be part of the solution. We will do that with open hearts through understanding, inclusion, and respect.

Interpreters are the tellers and facilitators of stories for our communities and public lands. As we manage and interpret public lands, historic sites, nature centers, zoos, and museums protected for all, we are unashamed about promoting diversity and inclusion. NAI and our profession includes and empowers the voices of People of Color, LGBTQ people, people with disabilities, and people across the gender spectrum. We strive to be cognizant of privilege. We embrace the value of diversity and work for full representation on public lands.

What You Can Do
To learn more about actions you can take, organizations you can support, or social justice resources for interpreters, visit NAI’s Diversity, Equity, and Inclusion Online Resources page.

Read NAI’s Mission and Core Values at www.interpnet.com/Mission

Read our Diversity, Equity, and Inclusion statement here: https://www.interpnet.com/NAI/docs/NAI-DEI-Statement.pdf

Image Credit: unconditionaleducation.org

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being an American naturalist during the eighteenth and nineteenth century required skill, intelligence, determination, support, and some luck. Self-taught naturalist Thomas Say (1787-1834), who identified more than 1,500 species of insects and animals unique to North America (including the coyote), was one of these brave naturalists who helped blaze a trail for future naturalists. This award program is named in his honor, as are numerous species such as Say’s phoebe, Sayornis saya. He represents innovation, commitment, and a passion to contribute to science.

Through this awards program, we strive to honor naturalists who have demonstrated the highest accomplishments of our profession and have inspired greater understanding, awareness, and stewardship of our natural resources. Nominees must be NAI Interpretive Naturalist Section members. It does take a little time to prepare a good nomination and put it together with accurate information and clear details. However, the results last a lifetime.

These awards of excellence not only provide much deserved recognition for our fellow section members, but they also bring to the attention of administrators that they have outstanding employees, whose abilities and talents are recognized by other outside professional individuals and organizations. And, at times, it helps sway agencies and their budgets to be able to send these award recipients to the conference to receive the award in front of their peers.

It is now YOUR turn to make the effort and nominate someone (or something). The awards for 2020 are going to be given during the annual section meeting during the NAI national conference November 10-14 in St. Augustine, Florida.

The award nomination information can be found at [2020 IN Section Awards](https://naiinsection.wordpress.com/342-2/). So, choose a nominee, download the forms, and get the process started today. The **deadline for nominations is August 15, 2020.** Send nominations to Awards Chair Lori Spencer, bflyspencer8@gmail.com.
7 Ironic Opportunities that COVID has Gifted the Interpretive Profession

By Jon Kohl

Reprinted with permission from Jon Kohl’s Facebook Post

https://www.facebook.com/notes/jon-kohls-heritagepatrimonio-interpretation-internacional/6-ironic-opportunities-that-covid-has-gifted-the-interpretive-profession/4073893416016752/

The Editor highly recommends going to the blog posted above to read the entire blog.

Born of INTERPtalk

Wednesday (May 27, 2020) I participated in my first Interptalk, a one-hour conversation about interpretation facilitated by NAI’s Deputy Director Paul Caputo. He tried to steer us away from COVID-19 by asking about hot topics in interpretation today. Despite his attempt, I realized that the pandemic has gifted several ironies-opportunities to interpreters brave enough to take advantage.

1. During Virtual Interpretation We Should Focus on Interpretation Fundamentals, Not Technology

Ironic: The virus has driven us online so naturally we want to talk about technology, but we shouldn’t.

Because we operate online, we abandoned powerful engagement techniques: activate the five senses, be in a heritage place, interact with others... So, if we offered mediocre interpretation under the best of conditions, imagine a similar program online. This means when online we have to invest much more in the fundamentals of classic interpretation: Strong themes, great storytelling, compelling and clear presentation structure, powerful images, provocative questions, moving oratory, and preparing participants to lead and act in their virtual zoom boxes.

During the closing keynote panel at the recent InterpTech conference US Forest Service Acting Southwest Regional Director and interpretation expert Toby Bloom (third row in picture above) mentioned the importance of strong storytelling skills especially now that we work from virtual platforms. Interpreters sentenced to two dimensional prisons (above) like General Zod and his conspirators in Superman (Right).
2. We Should Build on Our Current Visitors More than Look for New Ones Online

Irrory: We must social distance and stay away from other people, yet this same motivation drives people to protected areas. If a) we need to social distance b) and it’s easier to do that more safely in the outdoors, then c) let’s go to protected areas during the pandemic! This is what has happened at many places, and ironically it happens when interpreters have been sent home to attend virtual visitors. Many management agencies dream of converting new virtual visitors into physical people when the pandemic subsides. But the influx of people who have been visiting protected areas and appreciating outdoors perhaps more than before the pandemic are a more ripe audience as they have ALREADY demonstrated a willingness to visit. A wise park manager then would get non-personal materials as quickly as possible into parking lots, larger trails, and websites to ensure visitation becomes permanent.

3. Reframe the Pandemic with Life, Not Death

Irrory: It is easy to get depressed with America’s 100,000+-death figure and frame the pandemic as a deadly disaster, but at the same time much wildlife is in deep gratitude for time off from humans. No doubt you have heard about the “breather for nature” and the clean-air bonus. But more broadly where this has occurred new interpretive opportunities have emerged to observe a real-life experiment in action. Where wildlife has recolonized, and air has become more breathable interpreters possess a great but fleeting teachable moment. Take pictures, videos, testimonials, air and water tests as these conditions will not last. And then use them to infuse hope into your programs or to interpret natural resilience.
4. COVID Has Laid Great Thematic Opportunities at Our Feet

Ironic: Though similar narratives recycle in the media like air in a passenger plane, the pandemic has created many new thematic opportunities.

If your interpretation tends to be more descriptive than provocative with less impactful themes, then your time has arrived to practice thematic interpretation. Now’s the time to upgrade because the pandemic gifts us fresh, relevant examples of many processes that before we had a harder time making relevant for audiences. Consider the following Big Ideas (but not polished themes) which can be readily planted and grown into strong themes:

1. Viruses too travel, look for refuge, reproduce, and find new ways to get under our skin.
2. Natural barriers often keep viruses and humans (and other species) separated but disturbances (such as deforestation) can break down those barriers and cause formerly separated species to mix.
3. All species over time suffer rise and falls in their populations as they face new disturbances, such as disease.
4. One species’s loss is another’s gain.
5. Human cultural change accelerates when a population or society is under threat and it does so much faster than biological evolution.
6. The conveniences of globalized interlocking human economies come with risks.
7. A global challenge exposes many weaknesses in society as well as casts light on the true qualities of authentic leadership (hello, Jacinda Ardern).

If you need ideas on how to create themes, please see my book the Interpretive Theme Writer’s Field Guide (NAI 2018) based on Ham’s theories.

5. COVID Helps Us to Interpret Climate Change

Ironic: Although COVID appears to be a relatively short-term, fairly easily understood phenomenon, it casts light on many aspects that will make climate change interpretation a little easier too.

Climate change has been described as a hyperobject, something so massively distributed across time and space that it is impossible to completely know. (I talk about this in the next issue of LEGACY on interpreting climate change). In fact, COVID is a mini-hyperobject as it does cross many dimensions and affects all aspects of society, yet it is much easier to understand and perceive than climate change. So, what can our first pandemic teach about climate change and what kind of shared real-world experiences can we employ for climate change interpretation?

1. We saw over weeks what a real-world exponential growth tipping point looks like as COVID went from few infections to explosion. Such a tipping point is fast approaching in the climate crisis.
2. COVID also demonstrated invisible forces that make a big difference. In the US, the virus circulated for weeks before we detected it, and by then it was too late. Climate change also has a spaghetti-full bowl of feedbacks, drivers, cause-and-effect loops, sinks and sources, tipping and leverage points, and delays — physically invisible but will determine the future of humanity.
3. We can see that humanity has to work together to solve global problems despite differing worldviews.
4. Global problems affect different people differently starting with the poorest and most vulnerable.
5. Biological systems interconnect with social systems and economic systems and cultural systems. Big changes ripple quickly across them all.
6. The overriding rules of contagion are well known but how they affect us specifically is unknown. We surf on the leading edge of uncertainty. For global warming, we know the overriding rules too, but what life will be like in just a few years is not known specifically.
7. Different people literally create reality differently (again see my upcoming article). Conservatives and liberals literally see a different pandemic, different causes, different costs, different consequences. Global warming is far worse in terms of how different people understand it, especially when no one can fully see it.
8. Managing the pandemic is complex, global warming much more so.
9. Notice your feelings of anxiety, fear, maybe even excitement as the world changes under your feet, something that only a few months ago no one could have conceived. Yet many people, such as refugees, already know what it feels like when their world crumbles around them. Global climate change could be far worse.
10. Therefore, the value of taking action before symptoms are clear is the hallmark of exponential growth. As former HHS Secretary under President George W. Bush Michael Leavitt said, “Everything we do before a pandemic will seem alarmist. Everything we do after will seem inadequate.”

6. Ride the Global Surge in Consciousness

**Irony:** COVID separates us in our houses, but in fact, partially thanks to the Internet and partially because we have a global shared experience, it accelerates global empathy and consciousness.

In the past forty years, many people have grown increasingly concerned about other kinds of people even in places they have never been. TV and later the Internet have accelerated the process by showing us close up the suffering of people in distant lands. With the Trump administration, many different interest groups have joined forces as they now see connections between their individual interests. Our planet in fact passed from what spiritual teachers call the third density to the fourth density in 2012 with the great change of phase in the Mayan calendar, thanks to the increase in global consciousness. Now with the pandemic, we have news media dedicating nearly 100% of their resources to the pandemic and we can empathize with people around the world. No one is immune to the virus and while it does affect different populations differently, once you get it, your experience is like that of millions of others. This increased empathy and consciousness should be gold for interpreters. Why?

a. It means many of the pandemic-related themes mentioned above are relevant to vast audiences across the globe.

b. If indeed interpretation is about connecting dots and making deeper connections, it means we can show through first-hand experience interconnections between humans and nature, people of different cultures, and ecological processes.

c. Interpretation is all about expanding awareness, so awareness or consciousness is the currency of heritage interpretation, now is the etime to spend it.
7. Take Advantage of Pandemic Meaning-Making

*Irony: Boredom is a major challenge of staying at home, but the pandemic also provokes inner reflection and deep meaning-making.*

In times of challenge, we contemplate the nature of our existence, our future, and being. Large existential questions bubble to the surface and being home gives us the space to contemplate them. Given that people are highly open and vulnerable as they create meaning that transforms perspectives, interpreters would be wise to integrate into programs those big questions already slushing in people’s minds. It is great interpretation to build on what already occurs in people’s minds. Since thematic interpretation aims to direct people’s thoughts through themes, interpreters could really help audiences by guiding confused thoughts and connecting them with meanings associated with your sites and your heritage. Furthermore, these big existential questions are HIGHLY relevant now, and few ingredients are more important to effective interpretation than relevance. Don’t just return to the old patterns and topics that you interpreted before the pandemic, rewrite every single program to take advantage of what’s on people’s minds now to facilitate deep meaning and connection.

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**NAI Shining Star Award**

Have you witnessed a fellow interpreter going above and beyond the call of duty? We are looking to recognize NAI members with these qualities on a monthly basis. The NAI Shining Star Award will highlight the amazing interpretive work being done by members, like you, all across NAI. This award is meant to highlight winners' efforts to the NAI interpretive community as well as the winners' supervisors and coworkers.

To nominate someone for the NAI Shining Star Award email NAI Member Liaison Heather Manier at hmanier@interpnet.com with the following information:

- Contact information of the nominee (name, title, site, work address, work email, and work phone)
- Example(s) of how the nominee went above and beyond their routine duties.
- Example(s) of how the nominee's action made a positive impact on visitors, resources, or NAI.

These awards are independent of the NAI Professional Awards.
Black Conservationist Lead the Way Locally and Nationally in Environmental Action

Portion reprinted from: https://www.ecoinclusive.org/blog/black-conservationist-in-colorado

In celebration of black history month meet 15 inspiring black leaders in the Colorado's environmental and outdoor movement. These leaders are igniting lasting change in their communities and beyond. From trail runners to environmental justice activists, black people are making a huge impact in the environmental movement. Celebrate Black History Month any time of year by taking a closer look at some notable black environmentalists and outdoor leaders working in Colorado today.

C. PARKER MCMULLEN BUSHMAN

BUTTERFLY PAVILION / ECOINCLUSIVE/ Earth KWEEN

Parker McMullen Bushman (she/her/hers) is the Vice President for Community Programs, Education and Inclusion at Butterfly Pavilion in Westminster, CO. She is also the CEO and Founder of Ecoinclusive and Earth KWEEN. Parker’s background in the conservation, environmental education and outdoor recreation fields spans over 22+ years. Parker has a passion for equity and inclusion in the outdoors. Her interest in justice, accessibility, and equity issues developed from her personal experiences facing the unequal representation of people of color in environmental organizations and green spaces. Parker tackles these complex issues by addressing them through head on activism and education. Locally and nationally she works with environmental organizations to aid them in building a culturally diverse and culturally competent organizations that are representative of the populations that they hope to reach and serve. She is a member of several committees that focus on diversity in environmental fields as well as a presenter and trainer on diversity issues.

“A basic principle of ecology is that diversity in an ecosystem fosters strength and resilience. The same is true in our organizations and communities. When we talk about environmental conservation issues we need everyone at the table and engaged in the conversation. Our hope for tomorrow is each other. So we must work together to make change happen.”

-C. Parker McMullen Bushman
Parker is also the CEO and Founder of an online resource forum called Ecoinclusive and the creator of Earth KWEEN and Summit for Action.

Earth KWEEN is dedicated to disrupting the narrative that only able-bodied people from dominate culture care about the environment and participate in outdoor recreation activities. KWEEN stands for Keep Widening Environmental Engagement Narratives. Earth KWEEN challenges traditional representations of what it means to be outdoorsy by showing a variety of bodies engaged in outdoor spaces.

Summit for Action is a gathering for thought-provoking discussions and solutions-based recommendations for Justice, Equity, Diversity and Inclusion in Nonprofit Organizations. Summit for Action brings together leaders and key stakeholders and will features a mix of planned and open space conference sessions intended to help organizations build diverse workplaces and increase community impact.

LEANDER R. LACY
LACY CONSULTING SERVICES, LLC

Leander Lacy founded Lacy Consulting Services to provide a combination of social science, strategic planning, and diversity, equity, and inclusion thinking to conservation organizations to help them stay relevant and reach their human wellbeing targets. He began his career with the Florida Fish and Wildlife Commission as an Urban Interface Wildlife Biologist with a focus on Florida Black Bears. He worked to change behaviors of communities that had a perception of what they called “nuisance bears” that rummaged through unsecured garbage and generally frightened people with their presence. This provided Leander the opportunity to sharpen his conflict management skills and highlighted the need for effective communication. With a focus on the people side of conservation he obtained a M.S. in Human Dimensions of Natural Resources at Colorado State University. His thesis looked at how to improve the quality of life of the urban poor through environmental action in Chiapas, MX.

Leander went on to work 8 years with The Nature Conservancy. His final role before starting his own business was as the Global Methodology Learning Coordinator where he assisted teams throughout the world with strategic planning on large-scale conservation issues and ensuring that social science principles were incorporated. Now he takes his extensive experience and is helping environmental organizations accomplish their goals in innovative and people-focused ways. He recently facilitated a strategic planning process for a 5-state collaborative to save the Southern U.S. shortgrass prairie, he is helping an organization understand their need for diversity, equity, and inclusion in their North America agriculture approach, and recently his company became international as he was sought out by a conservation group in the Bahamas to conduct focus groups to understand and begin mending the breakdown in trust between fishers, law enforcement, and conservation groups.

www.lacyconsultingservices.com
Find his organization on Facebook and LinkedIn

“I’ve heard it said before and I take it to heart: conservation happens at the speed of trust”
- Leander Lacy
KRISTE PEOPLES
BLACK WOMEN'S ALLIANCE OF DENVER / LIFES2SHORTFITNESS / CITYWILD / WOMEN'S WILDERNESS

Kriste Peoples is a Denver-based writer, trail running coach, outdoorist, and meditation teacher. Her work combines her passions for public speaking and facilitating affirming experiences that connect underrepresented communities to new, empowering narratives of wellness.

"The outdoors has always been an extension of who I am. I have always loved to move in the outdoors. When I was a child my mother would say I 'ran the streets' with my friends, playing in backyards and playgrounds, climbing trees and riding bikes 'til the streetlights came on. These days my playground is the mountains, and I run and climb the hills nearly every chance I get. It's a simple and profound gift to be able to share my excitement for the outdoors with others, whether it's in the form of a talk or workshop, or guided outing with families, or participants in running clinics. It's all the same to me: nature is for every body and we're the better for it. Plus, we get to be the adventure any time we choose!"

kristepeoples.com

MONTICUE CONNALLY
JIRIDON APOTHECARY

Monticue Connally is a Colorado Medicine Man/ Herbalist who resonates with the sounds of African Drums, Rhythmic Chanting and Afro-Caribbean Folklore. Herbal Men’s Health, Herbalism Basics, Blessing with Herbs and many other esoteric/ nature related topics are subjects that you can find Monticue providing around town places like Ruby Hill Tiny Farm and Woodbine Ecology Center. He teaches several classes for the Denver Botanic Gardens Herbal Certification Program and is also co-owner of Jiridon Apothecary, a business specializing in loose leaf herbal tea remedies. He leads community herb walks and offers both herbal and spiritual counseling to the community. He’s a drummer for the annual Kwanzaa celebrations where he is often asked to speak to the children and rap songs about the many wonders of plant medicines. He has also made himself available to come to the homes of Colorado residents with his holy prayers and plants to get rid of negative energy or spiritual entities that make residents feel uncomfortable. Herbs, the outdoors and alternative healing methods have been a lifelong interest for the Denver native who plans to continue to use workshops and music to teach people in urban areas how to access the many esoteric tools within along with the earthly medicines growing around them.

"We’d do well to follow nature’s example by being who we came to be, make the most of what we have, live peacefully together, and bloom where we are planted. " - Kriste Peoples

"The misconception is that the more spiritual we become, the more “far out” we become. this couldn't be further from the truth. The more spiritual we become, the more rooted we become. Through deeply growing inward our capacity to powerfully connect outward brings the humility to see both the teacher and the human within the trees, shrubs, waters, animals and lands..." - Monticue Connally
He received the Preventative Care Leadership Award from the Be Well Health Initiative in 2019 for being of service to a community that is learning to appreciate these ancient medicines and have more faith towards the services of local healers.

Website: JiridonApothecary.com
Instagram: @a_root_awakening

Facebook: Monticue Connally
Patreon: Patreon.com/arootawakening

Editor’s Note: This was only a small portion of the original in-depth article. Please go to https://www.ecoinclusive.org/blog/black-conservationist-in-colorado in order to read the entire article and resources.

Photos and Memes from Joseph Gerans

Don’t grieve!
Anything you lose,
comes round in another form.
Rumi

THANK YOU
to all Nurses
Doctors
Medical Personnel
on the front
lines of this
global pandemic

Intellect takes you to the door,
but it doesn’t take you into the house.
Shams Tabri

When you do things from your soul.
Do you feel a river moving in you, a joy.
Rumi

You are so brave and quiet
I forget you are suffering
Ernest Hemingway
When a species causes massive illnesses or deaths to members of another species, a pandemic results. Some that cause obvious and immediate economic harm receive widespread attention. The emerald ash borer that arrived in Detroit in 2002, spread rapidly killing ash trees in a widening radius. It cost communities, businesses, and private property owners billions of dollars. The financial burden gained human attention.

The loss of an ash tree’s life did not result in the same concern caused by the loss of a human neighbor or family member to coronavirus. The death of people in China did not disturbed people on our continent as much as the death of people in Washington state. In Michigan where I live, people contracting the disease elevated local concern even more. This is perhaps because we recognize the virus might personally make us ill or kill us.

When the concern is not likely to kill us personally, we do not elevate actions immediately. The emerald ash borer spread as a pandemic through forests killing most ash trees. The beetle likely arrived in wood pallets and moved to live trees that had not developed evolutionary defenses. Pallets are now pre-heated to kill exotics before allowed entry. When exotic species investigate native species, new defenses through co-evolution begin to develop. One feeding on a new food source results in the other developing defenses that prevent being fed upon. If successful both survive by developing ecological adaptations. This is often a slow process.

The sudden appearance of a species from another part of the world adapted to feed on a similar species, might find easy pickings when introduced to exploit a region like occurred with the ash borer. People lost trees in their yards, forests lost timber that could have been harvested, and cities found public land full of trees that presented public safety hazards. The general public took notice because of economic and safety concerns.

The loss of life of an individual tree in the yard does not bring a similar emotional response that comes with the death of a person dying next door. When the borer beetle pandemic spread, few people realized the impact on forest economics for other species. It closed the tree “restaurants” used by hundreds of other species similar to how human restaurants have been closed during the coronavirus pandemic. Tree bark was home to mosses and lichens that lost their residence like business owners might lose their residences as a result of state lockdowns.

People are not well attuned to the economic, social, environmental impacts that result from the successful establishment of exotic species. The stock market would fluctuate more greatly if we did. The American Chestnut blight caused economic harm and adversely affected businesses in the early 1900’s. Dutch elm disease in the 1950’s created similar devastation and had the added danger from DDT used to control the vector beetle carrying the killer fungus. Economic stress cannot be separated from environmental impacts that result in social harm that undermine community health and sustainability. Many economic woes can be traced to inadequate environmental policies. Sound environmental laws protect our economy and health.

Pandemic loss of native species is caused by more than diseases. Beautiful flowering species like purple loosestrife crowd other species from wetland habitats and remove ecosystem foundations essential for maintaining community health. Basically, non-native loosestrife removes grocery stores, banks, apartments, construction warehouses, hardware stores, and pharmacies in wetland habitats needed by native species.
What If
Poem and photo by Luiza McKaughan

what if
Mother earth
is trying to save her planet and her children
that she created
she is trying to get our attention
Before we destroy ourselves and the rest of life
on the planet
Reports of species extinction
global warming
pollution of air water and land
arms race nuclear weapons mutually assured
destruction
did not get our attention
Horrifying loss Globally
destabilization of the systems that we take for
granted
did not get our attention
Not only did she need to get our attention
she also needed to Teach us
that we are not separate from each other and from
the rest of life on the planet
We are all connected
We are all mortal
We all have the same needs
for survival and connection
We are in tangled
In tangible
In touch
In this together
forever
Please make her efforts not have been in vain
Please may the horrible loss of life not have been
in vain
Please may we see with new eyes and feel with new
hearts
please may I see with new eyes
May I feel with a new heart
Blessings
Luiza

Night-blooming Cereus
Cactus by Luiza McKaughan

Invasive species simplify the community and bring about instability. The long-term impact eventually harms human financial community health when we have not taken adequate care of environmental and social needs.

Exotics cause havoc and costs billions of dollars in damage to our economy. Invasive species result in pandemic losses that directly impact our lives but often are not noticed. Finding interpretative methods that draw parallels between coronavirus and pandemics in nature might be one way to help people understand social, economic, and environmental sustainability are united.

Natural history questions or topic suggestions can be directed to Ranger Steve (Mueller) at odybrook@chartermi.net - Ody Brook Nature Sanctuary, 13010 Northland Dr. Cedar Springs, MI 49319 or call 616-696-1753.
Much of this tumultuously painful year in US politics was drenched in a heightened awareness of issues surrounding racial identity and equity, at least for white people like me.

But for people of color, it was just another year, one more year of being worried if their sons and daughters would come home safely when driving while black; one more year of legitimate concern that employment opportunities and career advancement were nowhere near equal to that of their white counterparts; one more year of knowing that their not-so-distant ancestors were not landowners but were in fact slaves that contributed mightily to the financial successes of white farmers and manufacturers. In other words, for people of color it was one more year of continuing to be subjugated by the dominant culture. It’s easy to forget, as a white person, how this centuries-old construct affects everything and everyone in this country. Including ornithologists.

J. Drew Lanham, a black man, teaches ornithology at Clemson University in his native state of South Carolina, not so far from where he grew up in rural Edgefield County where he was raised, mostly, by his grandmother, Mamatha. This experience surely formed Lanham to be who he is today, as he tells us on the opening pages of this fine memoir that touches on so many issues of being black in today’s America:

“I am a man in love with nature. I am an eco-addict, consuming everything that the outdoors offers in its all-you-can-sense, seasonal buffet. I am a wildling, born of forests and fields and more comfortable on unpaved back roads and winding woodland paths than any place where concrete, asphalt, and crowds prevail.

But Lanham is also a man in love with words and writing, and fortunately for us, he realized early in his career that there is a place in this world for learned and informed writing about nature that goes well beyond the scientific papers aimed to “impress other professors,” as he puts it. As one might expect, the writings of the great naturalist Aldo Leopold, with his iconic Sand County Almanac (first published in 1949, with more than two million copies sold since then), still influence Lanham. But while many, mostly white, Americans were drawn to the burgeoning conservation movement in the ‘70s that Leopold helped to spawn, Lanham truly found his conversion by residing with an old woman whose connection to nature was as natural for her as breathing is for the rest of us.

“The Home Place” is how Lanham refers to his childhood home. His mother and father were hardworking school teachers and farmers on the side, and in the ‘60s they built a house in the country called the Ranch, just down the road from Mamatha’s older and much more ramshackle place where Lanham spent most of
his time growing up. While urban and suburban kids played basketball and football or hung out with their friends going down to the corner store after school, Lanham explored the land on which he lived. He observed the flora, both native and cultivated, as well as the fauna, both wild and domesticated; and at the early age of seven he remembers being completely taken in by birds and buying his very first field guide. In college, Lanham was steered away from his love of the natural world and directed instead toward what was considered more practical and more employable: engineering. But that calling did not prove true to Lanham’s rural roots and so he soon turned formally to ornithology.

Lanham first came to the attention of the American literary community in 2013 when he published a small, slightly irreverent piece in Orion called “9 Rules for the Black Bird Watcher,” which are worth noting here:
1. Be prepared to be confused with the other black birder.
2. Carry your binoculars—and three forms of identification—at all times.
3. Don’t bird in a hoodie.
4. Nocturnal birding is a no-no.
5. Black birds—any black birds—are your birds.
6. The official word for an African American in cryptic clothing—camo or otherwise—is incognegro.
7. Want to see the jaws of blue-blooded birders drop faster than a northern gannet into a shoal of shad?
8. Use what’s left of your black-president momentum on the largely liberal birder crowd to step to the front of the spotting-scope line to view that wayward smew that wandered into US waters from Eurasia.

Reading these rules gives a pretty clear understanding of some of the difficulties faced by Lanham when birding while black. (The only vague rule is #7, which in his Orion essay was expanded to suggest that one should inform people that our nation’s most famous birder, John James Audubon, was born, as he was, by a black Haitian mother.) While Lanham makes light of these occupational obstructions, he has faced real dangers on birding expeditions, such as when he was in an isolated corner of rural South Carolina accompanied by a white female colleague, and three locals in a pickup truck draped with a Confederate flag suddenly appeared. No confrontation occurred but the fear and uncertainty remained, and still does to this day.

Yet for Lanham, who loves the landscape of his origins, there is no denying that this lush and verdant land of the American South—despite its long traditions of social inequities—will always be his home. A home he shares with others who may look and act differently than he does, but who often share his love for this big world of nature.

As Lanham tells us at the beginning of The Home Place that besides being an ornithologist and a man in love with nature, there’s no escaping that he’s also . . . a man of color—African American by politically correct convention—mostly black by virtue of ancestors who trod ground in central and west Africa before being brought to foreign shores. In me there’s additionally an inkling of Irish, a bit of Brit, a smidgen of Scandinavian, and some American Indian, Asian, and Neanderthal tossed in too. But that’s only a part of the whole: there is also the red of miry clay, plowed up and planted to pass a legacy forward.

As he tells us in this beautifully told, quiet story of a memoir: “Home, after all, is more than a place on a map. It’s a place in the heart.”
We can all agree 2020 has not turned out as expected no matter our country of residence. Two years ago, my family moved from Las Vegas, Nevada to settle in the southeast of Victoria, Australia. We reside in an area called the East Gippsland Shire. The shire covers an area three times as big as Delaware (20,940 square kilometers). Many small towns make up the shire and there is an abundance of parks, protecting specialized habitat. Little did we know how much our new life was about to change.

On December 29, 2019 I was working at the Buchan Caves Reserve, finishing up cave tours. We had planned to evacuate the park, as the danger of fire was extremely high. For weeks we had been living with three different wildfires blazing around us but that night changed lives. The fire raged out of control throughout the night and grew to unimaginable proportions. This continued for days as residents across the shire desperately tried to protect their homes and livelihoods.

Sections of the fire joined other fires burning in New South Wales to create one large devastating blaze. After 91 days the fire was officially contained. My experience is only one of the thousands, as fires had been burning all across the country. The Australasian Fire and Emergency Service Authorities Council (AFAC) tweeted on 28 February 2020 that over 17 million hectares had burned across New South Wales, Victoria, Queensland, Canberra, Western Australia and South Australia. Leaving the Northern Territory, the only state in Australia left untouched.

March saw the end of the inferno and the process of recovery could begin. Destruction assessments and recovery plans were initiated and then Covid-19 hit, stalling most progress and planning for recovery. Non-native species, like deer, fox and pigs, are using this time to boost their numbers and move into areas previously uninhabited by them. This devastatingly adds more stress to already periled native wildlife. The next few years will be critical to establish positive outcomes with bushfire recovery.
What does this mean for wildlife interpretation? The answer depends on the state and the park you visit. In my time working for the parks system here, I have discovered there is a lack of quality interpretation programs. Parks Victoria is only now trying to recover interpretation skills from an older outsourcing plan that failed. Junior Ranger programs are the best offering for any quality wildlife interpretation. These occur during school holidays and at no other time. This greatly limits the reach. Bushfire walks being created in my heavily hit area were cancelled due to Covid-19.

I spoke with a Visitor Experience Team Leader for New South Wales Parks and she confirmed they are similar. Junior Ranger programs are the largest offering of wildlife focused topics. There are no interpretive plans, manuals, guidelines, etc. developed internally. It would be very park specific if there were any focused wildlife programming occurring. She also confirmed the bushfire recovery in New South Wales is just beginning and has years if not decades to go.

I continued my search to see if this was a theme in other states. When speaking with the Interpretation Manager for Parks and Wildlife Division in the Northern Territory (NT), she stated “In NT Parks, we don’t generally concentrate specifically on wildlife interpretation. Our face-to-face programs may be a combination of site, wildlife, cultural and historical interps – depending on where it is.” There are two Wildlife Parks within her division which offer plenty of interactive wildlife interpretation including raptor shows, lagoon feedings and nocturnal tours. She also explained the Junior Ranger programs were important and the leading school program, Be Crocwise, is a “major project that we undertake every year – trying to speak at every school across the Top End at least every couple of years.” Covid-19 has resulting in the cancellation of all of these programs in 2020. Staff has been working diligently on videos and online learning resources to compensate for the loss of face-to-face programming.

We are all facing the same choices. How do we reach our audiences during these times? Do we have a budget to allow a larger project? We may use something as simple as Facebook to do live “ranger talks” or a more elaborate project with a company like Timelooper. No matter the type of technology you are using or considering, the key is to reach our audience in whatever way we can. Even though there is an ocean separating us, we are all in the same proverbial boat.

Through the darkness does come light. The growth of the surrounding trees shows us life will revive in Australia. Surveys of some species, like the long-footed potoroo, are revealing they are back in their usual ranges, finding food and breeding. Through the bushfires and Covid-19 restrictions life is moving forward and we will continue to do our best in taking care of Australia’s unique wildlife and interpreting it to our audiences.
BOOK REVIEW

Earthwalks: an alternative nature experience

Reviewed by Mike Mayer

Looking for a new way to help connect your outdoor visitors to the earth and its life beyond the typical “follow me, gather ‘round” technique that relies solely on naming and labeling? Interested in helping others develop a deeper sense of place through the feelings of joy, kinship, reverence, and love for the earth? As a leader do you want some straight-forward techniques and ideas for a different kind of walk in nature? This new book by Steve Van Matre and the Associates at The Institute for Earth Education (IEE) provides activities and leadership guidelines for memorable natural experiences for visitors from 9 – 90 years old.

The book itself is colorfully designed and divided into three main sections: Introduction to Earthwalks, Earthwalk Leadership Guidelines, and the 50 activity descriptions developed by IEE. The opening section details what an Earthwalk is, how the four feelings (Joy, Kinship, Reverence and Love) are an integral part of the EW and provides some general earth education leadership guidelines developed by IEE. The second section, titled Six “Measures” in Composing a Great Earthwalk, provides specific details for leaders when planning and leading an EW using Preparation, Participation, Organization, Focus, Pace and Flow.

The final section of the book is devoted to the 50 EW activities. Twenty (20) of the activities will be familiar to some readers from the former “Earth Magic” and “Snow Walk” sets and these have been lightly revised. Thirty (30) activities developed in deserts and forests, along the seashore and in fields, and during sunny, rainy, and snowy weather are brand new. Each activity format uses a “you are there” narrative description, a list of activity “instruments” needed, some general notations for the leader, and what feeling the activity is designed to enhance.

Earthwalks are fun, but not frivolous. They are a serious educational and interpretive response to our increasing separation from the planet’s natural systems and communities. An Earthwalk can help leaders highlight the beauty and wonder of the earth for visitors in any natural community. To read the complete review of this publication visit the Experiential Interpretive Design website. IEE offers workshops on leading Earthwalks and the book is available directly from the publisher (ieetree.org).

See the full review at: https://eidcoaching.com/blog-main/2020/4/24/earthwalks-using-our-senses-to-deepen-our-feelings-for-the-earth

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During the winter of 2019-20, an unusual yet intriguing gallery display was hosted by the Springfield Art Museum. The artist was Randy Bacon and his exhibit was called “The Road I Call Home.” I had been told how powerful the photos and stories were, but I had no idea how touching and engrossing this exhibit had interpreted the local homeless in my community.

The following is reprinted from the museum Randy Bacon’s exhibit introduction:

Randy Bacon is a contemporary American photographer based in Springfield, Missouri. He has an extensive history in portrait, commercial, and documentary photography. At the core of his work is the ability to present emotive visual stories of the people he photographs.

This exhibit presents new portraits from the series “The Road I Call Home” featuring simple, direct, casual studio portraits of homeless individuals living in Springfield. These portraits emphasize the beauty, identity, and integrity of each person and its accompanied by a narrative, as told by the subject, sharing their personal story of homelessness. The goal of this project is to bring awareness of out homeless community and convey one simple message according to the artist – “That we’re all people and every single one of us matters.”

As a photographer myself, the gallery showing was visceral and emotionally challenging. In addition to capturing the visual personality of the subjects – homeless individuals in SW Missouri, he captured their passion in story.

This story, about Lou captured my eye and my heart. I wanted to share Lou with you.

Lou

When I moved out here to this camp, at most there were maybe eight people. We cleaned up the area—it used to be so trashed. But we got our stuff and we cleaned the whole entire thing. For a long time I wouldn’t let my dog out here. I had to just about childproof my tent and my yard, because before he got his medicine he was almost completely blind. Any little stick and he would trip on it. But the eight of us cleaned up the area. You’ve got to take care of each other. If you don’t watch out for your neighbor and those around you, by God wouldn’t that be terrible? That’s the way I look at it.

I wish every parent would teach their child respect. It’s the biggest deal. You can whip a child, but that won’t help. Not really. Take them out and get them to help somebody else and they will learn. A child does something wrong and you should take them out into the woods. Let them experience nature. Then you won’t have them tearing up buildings. Let them enjoy it. That’s what we are here for. And if all the children learn respect, no matter what creed or color you are, you’re going to get the same respect that you give out. I tell people I don’t like people because sometimes when you talk truth to them, they don’t like it and they turn their backs.

I enjoy life. You know, if we all went around with a frown, without saying hi to somebody, what would that be like? If we could teach our younger generations, instead of saying, “Oh look at that poor man,” instead of feeling pity for them... go out and do the things they do. I’ve always been an outdoors man. I like coming outside and looking at nature, you know? People say, “Oh man, no, that’s nasty.” But without trees and stuff, we’d have no oxygen. I think everybody needs to just step outside. Take a weekend and rough it. You might say, “What am I going to do here?” but you’ll pick it up and learn to respect nature more than you used to. Instead of throwing trash or broken bottles, take care of it. Cause it ain’t
going to be here forever. That’s what I think. You know people are just throwing their cigarette butts out—what do you imagine is going to happen? If everyone took the time and just started experiencing a little bit outside, maybe everyone gets the idea to share and enjoy. That’s what makes you gain wisdom—experience. And everyone’s in this together, you know. I wish people would pick up the place and watch out for everybody. It doesn’t matter who they are. Pick them up if they fall. Because I don’t want to be back in society. I really don’t. This is my home.

I watch out for people, and I watch my birds and you just can’t get that in the city. We had a couple hawks out here, and a couple owls, things like that. You don’t get to see that in the city, and I the way I look at it, people are robbing themselves. Because it doesn’t matter how much money you’ve got, or how big your house is, or how new your car is. We all still bleed the same way. Go out and enjoy the world—leave your things inside. I think the world would change. If you treat people right, that will spread like a virus. There are a lot of things people say that I don’t like or agree with, and you know what? Everybody has the right to their opinion. There’s a lot of people who don’t like what I have to say, but I just go with it. I’ve learned life is what you make it. It really is, and I feel a lot better than other people who don’t have this. A therapist once told me, “If you ever get so mad that you want to do something bad, just go out there and walk. You just walk. By the time you’re walking you won’t even know what you were mad about.” And it worked.

I invite you to see more photos and stories of Randy Bacon’s work at https://www.randybacon.com/homeless

A High Bridge
Poem by Clint Mooney, High Bridge Trail State Park, Virginia

The things that one could see when sitting up above.
The valleys holding rivers. Just look at how they hug.
Massive ravens, birds in migration and the occasional turtle doves.
The things that one could see when sitting up above.
Feel the wind.. Hear nothing.. When sitting so high..
A break in the clouds. A bridge in the sky.
Dark summer nights the trees light up with fireflies.
While fall sunsets create a beautiful crimson tide.
Think I should come down? No better not.
I'd rather sit here with my book and this one final thought.
To remain faithful. Stay hopeful and know that you are loved!
Ohh.. The things that one can see when sitting up above.

Photo of fireflies from Visitfarmville.com
A virtual 40th “Eruptiversary” for Mount St. Helens

Story and photos by: Alysa Adams, Parks Interpretive Specialist at the Mount St. Helens Visitor Center

For the past year, the staff of the Upper Cowlitz Recreation Area (in Southwest Washington) have been busily preparing for the “Big four-oh”, and we’re not talking about a birthday. This was a big year for volcano enthusiasts, local residents, and folks near and far affected by the 1980 eruption of Mount St. Helens. It has been a momentous chapter for geologists, researchers, and other members of the scientific community. An event in Washington’s history, a topic of curriculum in our schools, and a natural disaster our future generations will continue to hear about. This well-known volcano our staff has the honor to educate on and help protect has been the center of our attention- and for good reason! It famously erupted May 18, 1980- taking 57 lives with it and forever altering the surrounding land- and this year marked 40 years since the passing of that cataclysmic day.

With high expectations from visitors, locals, and partners to commemorate this date our team got to work! We pulled together to provide travelers a beautiful visitor center, manicured grounds, a seasonal exhibit with memorabilia and oral history content, and a culminating weekend event packed with educational offerings, guest presenters and family activities. With staff spearheading different passion projects to contribute to the overall success, we were on-track to make it happen! As many of you experienced first-hand, the pandemic hit, and plans changed quickly. Much like the 1980 eruption, we were soon immersed in an unexpected situation during unprecedented times, requiring us to get creative and stay open-minded. With the Visitor Center closed many of our events went virtual- and our impact became farther reaching than we could have imagined (around the world like the ash!) Our efforts even made a rumble on KNX Northwest Public Radio, KOMO 4 News, and the Seattle Times Pacific Northwest Magazine.

Fortunately, we had established a multi-agency 40th eruption anniversary committee a year prior, and we shifted our priorities. Our agency (Washington State Parks) started an “Ask a Ranger” Facebook Live series (#AskaWARanger), where Mount St. Helens was the first topic presented. The Washington State Parks Foundation converted “The Great WA Camp-Out” event to “The Great WA Camp-In” and offered a virtual camping experience; with a Mount St. Helens ranger talk alongside the poets, musicians, and dancers. Thanks to our many amazing partners (USFS, USGS, MSHI, and The Cowlitz Indian Tribe to name a few) we were able to collaborate multiple offerings for the public. When May 18th came with a bang, we were still ready. Between all the varying platforms available to our viewers we soon realized we had larger audiences than would have arrived in person. The Washington State Historical Museum hosted our May 18th Story-Hour Event, and we had over 400 participants that evening, with over 10,000 views after. On the Adventure Awaits Blog we shared inspiring quotes from our Oral History Project to showcase the voices of the Mount St. Helens community. We partnered with the Mount St. Helens Institute to provide youth focused content for the teachers hosting classes online.
Our Folks and Traditional Arts program launched social media posts leading up to the big day (check those out here and here), as did many of our volcano colleagues.

Though this commemoration was not as expected, we all made the most of it and realized we were way ahead of schedule for next year! These trying times reminded us that our strength is found in our teamwork and a perseverance to embrace our nature in a new way. Working together with all the Mount St.

Helens partners provided a memorable virtual experience for the thousands of visitors unable to arrive in person. (Check out archived programs here). With our built-up excitement and passions ready for release (much like a pyroclastic flow), we have plans to regroup and try again in 2021 as we memorialize “Forty-wonderful years” for the 41st anniversary. We’re just crossing our fingers the mountain doesn’t get too excited between now and then…….

Expertise Directory Reminder

We are trying to build up the IN Section Expertise/Specialist/Interest Directory by getting more section members to send us their information. Remember, this is completely voluntary. That being said, we encourage you to participate in the development of this directory because it’ll be an effective way to build professional connections with your fellow Interpretive Naturalist Section members.

Our goal is to have at least 10% of our membership (that would be roughly 100 people) send their contact information and a summary of their expertise, specialties and interests. Once we get some critical mass, we’ll post the list on the section website for members to access.

For more information, email Lori Spencer at bflyspencer8@gmail.com.
Growing Partnerships to Restore the Ocean’s Coral Reefs

Before he retired, aquaculture researcher Dr. David E. Vaughan wanted to plant a million corals. It didn’t happen. The story could end here, but for Vaughan, the determination to see his dream become a reality spawned a not-for-profit organization. Based in the Florida’s Summerland Key, the Plant A Million Corals Foundation is concentrating its coral reef restoration efforts in the Caribbean while striving to connect with the Pacific and Indian Oceans. The Foundation is also SANACORA’s source for the coral used in its yacht-based restoration work.

Vaughan received the Distinguished Service Award from his alma mater this year. He earned a Bachelor of Arts in biology and chemistry from Graceland in 1975. During an independent winter term in Grand Cayman, Vaughan’s passion for the world’s oceans and the thousands of species that live beneath the surface awoke. He went on to earn a Master of Science in biology and microbiology from Fairleigh Dickinson University, and a PhD in botany and plant physiology from Rutgers University. His quiet, gentle demeanor cannot mask the inherent sense of urgency in his voice and work. Vaughan says that coral reefs are the foundation of ocean life and are the basis for our existence, too.

“Long-term—in 50 to 100 years—all corals will be gone unless we make serious environmental changes,” Vaughan says. “The way the oceans go is the way we will go. Our disappearing ocean reefs are the canaries in the coalmine.”

What Is Coral?

It’s hard to imagine an inland sea covering much of the Midwest, yet sea corals first appeared here over 500 million years ago during the Paleozoic Era. According to Lawrence Livermore National Laboratory, deep-water black coral (Leiopathes sp.) may be the “oldest known living skeletal-accreting marine organisms” persisting for over 4,000 years.

Plant-like in structure, sea coral branches and mounds consist of thousands of polyps. Polyps are animals that can range in size from the head of a pin to a foot in diameter. Each polyp uses calcium carbonate from seawater to build a hard, cup-like skeleton around a soft, sac-like body. Inside the polyp, algae live symbiotically to convert sunlight to sugar to provide nourishment. The algae also have bacteria that provides antibiotic benefits to support the coral’s immune system. Atop its body, a mouth encircled by stinging tentacles catches zooplankton. The coral, algae, and bacteria have an interdependent existence.

A World of Importance

Coral reefs protect coastlines from storms and erosion, provide jobs for local communities, and offer opportunities for recreation. They are also a source of food and new medicines. Over half a billion people depend on reefs for food, income, and protection. While coral covers less than 1% of the Earth’s surface, it is a contributing factor to 70% of the world’s oxygen which comes from the ocean. It’s the air we breathe.

The National Oceanic and Atmospheric Administration (NOAA) estimates the value of reefs’ goods and services to be worth $375 billion per year. Healthy reefs support fishing and tourism, while providing ecological benefits and medicinal resources. Bio-prospectors are exploring coral ecosystems to create pharmaceutical products from chemical compounds produced by species living in their confines, especially slow-moving and stationary species such as nudibranchs and sponges. Nutritional supplements, cosmetics, along with an assortment of medicines derived from coral reef ecosystems are currently being researched.

Providing habitat for one-fourth of all ocean dwelling species (roughly 4,000 species of fish, more than 800 species of hard corals, plus a myriad of species residing within the reefs that have yet to be recorded), coral reefs support a $100 million fishing industry in the U.S. For tourists, coral reefs provide sand for natural beaches that inspire the soul. Coral reefs reduce erosion and property loss by buffering shorelines from waves, currents, and storm surges, especially during hurricanes.

What’s Happening to Coral?

Since the first massive coral bleaching event recorded in 1997, the deadly phenomenon has been occurring with increased frequency as ocean waters have been warming.
Similar to a drought index, Degree Heating Weeks (DHW) record thermal stress in the ocean. When ocean waters are 2° above normal for four weeks, this is an 8 DHW, a point at which coral suffers severe bleaching.

“We used to get bleaching events once every 100 years,” Vaughan said. “The coral then had that much time to grow back. Today, with bleaching events every few years, and the increase in water temperatures, we’ve lost 50% of the planet’s coral reefs. It takes about two to four weeks for coral to bleach. Sometimes we see the bleaching six months after an event due to prolonged stressors.”

Bleaching causes coral to lose the symbiotic algae which gives it color and sustains its life. Coral is stressed by pollution, sedimentation that blocks sunlight, ocean acidification, overfishing, extremely low tides, and dramatic shifts in temperature. Bleaching causes coral’s beneficial algae to leave, reducing coral’s ability to access nutrients and it weakens its immune system.

A Losing Battle

During the second massive coral bleaching event in 2005, U.S. territories in the Caribbean lost 50% of their coral reefs. According to NOAA, “Comparison of satellite data from the previous 20 years confirmed that thermal stress from the 2005 event was greater than the previous 20 years combined.” Vaughan notes that the third massive coral bleaching event (2014–2017) affected coral reefs all over the world.

“Many reefs—including those in Guam, American Samoa, and Hawaii—experienced their worst bleaching ever documented,” concurs NOAA. During this third event, up to 98% of the coral in some reefs along the Northern Line Islands perished. The northern part of Australia’s Great Barrier Reef lost nearly one-third of its shallow water corals in 2016, while the reef further south lost another 22% a year later. “We’ve lost about half of the coral on the planet due mainly to warming of the earth’s surface,” Vaughan said.

With growth rates of massive corals estimated to be from 0.3–2 centimeters per year and branching corals up to 10 centimeters per year, “barrier reefs and atolls can take from 100,000 to 30 million years to fully form,” making restoration seem impossible (Source: NOAA).

Dr. Vaughan’s “Eureka Mistake”

Accidentally breaking a coin-sized coral into small pieces as he was removing it from an aquarium used for research, Vaughan had what he describes as his “Eureka mistake”. The three polyps that had gotten stuck to the floor of the aquarium grew tissue in two weeks that would had typically taken a few months.

While cutting corals into pieces—from as small as one polyp up to the size of a pencil eraser—Vaughan discovered micro-fragmentation. This process enabled his team to cultivate corals the size of three-year-old species in a few months. Size is a critical factor because it typically takes coral 25 years to reach a size where they can spawn. With expedient growth, micro-fragmented corals can reproduce sooner.

“We found out that most corals don’t become reproductive until anywhere from 15 to 75 years old,” Vaughan said. “Some of our coral fragments grew to maturity at 11 months—that would otherwise have taken 18 or more years to become reproductive.”

In his first year working with this new technology, Vaughan and his team produced 10,000 corals and planted 3,500. In the next few years, they produced 25,000 corals and planted 10,000 on a reef in the Florida Keys.

Micro-fragmentation has worked with 26 species of coral, including brain corals, boulder corals, mountain corals, and cavernous corals, making it possible to bring the skeleton of a 500-year-old coral back to life in a few years. Corals from the same genetic parents placed a few inches apart can grow together instead of competing, enabling a dead coral head to be “reskinned” much like a skin graft.

Fragments of Hope

Using a process achieved through selective breeding and 1,000 genetic re-combinations, Vaughan is assisting corals in adapting to climate change with the introduction of heat-resistant genes, as well as algae from coral that flourishes in higher temperatures.

“We’ve lost strains of coral that cannot take today’s temperatures. In a bleaching event, about one third of coral may die, one third won’t die, and the other group is bleaching resistant—we work with that resistant group,” Vaughan said.

Collaborating with the Mexico Institute of Fisheries and Aquaculture at the coral labs in Puerto Morales, Fragments of Hope in Belize, and The Nature Conservancy at five locations in the Caribbean, Vaughan has facilitated the planting of over 100,000 corals in reefs around Florida and the Caribbean.
Coral reefs were not destroyed overnight and will not return to their glorious beauty in the blink of an eye. But there is hope and a plan. With the dedication of Vaughan, his team at Plant A Million Corals, his partnership with Sanacora, and people who care about the future of coral reefs worldwide, restoration is possible and truly can make a difference.

**About Plant A Million Corals**

Director of Communications and Development Dee Dee Vaughan spoke with us about the work of the Plant A Million Corals Foundation and how people anywhere in the world can help through corporate sponsorships and donations, as well as cultivating awareness and education about coral reef restoration.

Her father, Dr. Vaughan, travels nearly every week to Caribbean coastal communities whose residents need solutions to restore the coral reefs they rely upon for survival. “Each of our projects is unique, and one of the first steps is outreach to troubleshoot the problem. Then, we determine more specific needs through an initial site visit,” Vaughan said.

The Foundation is developing mobile lab units for permanent placement at coral restoration sites. Customized travel containers for growing coral will be built in the Florida Keys and then placed in shipping containers for relocation. “We need planting partners to sponsor the mobile containers that will help scale our projects,” Vaughan said. Sponsors and donors can also help defray the costs of site visits, research, operating expenses, and the Foundation’s outreach.

To learn more and to donate, visit plantamillioncorals.org. To connect, email: plantamillioncorals@gmail.com, or call 772-216-0391 (EST). 

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3 Just for Fun Items

**By John Miller**

1. You choose the title for this story about *Frog Vomit Lozenges*
   - A) “Don’t Try This at Home”
   - B) “You Can’t Make This Stuff Up”
   - C) “Do You have $120K to Burn?”

Besides being a brilliant mathematician, Sir Isaac Newton dabbled in trying to help find a cure for the plague. In 1665, during the peak of the plague pandemic, Newton came up with his idea of *Toad Vomit Lozenges*. Yes, toad vomit! Newton describes in detail how to suspend a toad by its legs in a chimney for three days, until it vomits up "earth with various insects in it." He adds that this vomit must be caught on "a dish of yellow wax," Next, grind the toad into a powder and mix it with the vomit until you’ve formed several lozenges. Finally, place your toad vomit lozenges “about the affected area.” The best part is story is that for the bargain price of $120K you can purchase his actual hand-written concoction. Thank goodness he was better at math and physics than pharmacy! *To see the entire article and Newton’s hand written note, go to the Smithsonian Magazine Smart News*

2. If you think this last story was gross, then listen to this song performed by Bruce Springsteen in 1990 for a Disney album called “For Our Children: To Benefit Pediatric AIDS Foundation”. Listen to the song “Chicken Lips and Lizard Hips” at [https://www.youtube.com/watch?v=nJMrU0scAN0](https://www.youtube.com/watch?v=nJMrU0scAN0)

This song is great for camps, Halloween, and getting kids to eat leftovers.

3. Rare Photo and Question to Ponder

Photo of the rare migration of majestic gooseberries. And why aren’t two or more gooseberries called geeseberries?
As a nature interpreter in Juneau, Alaska, I often feel like I am herding cats as I strive to inspire guests to understand and respect nature. Therefore, I savor hiking alone on my days off. I relish the serenity and grandeur of the Tongass National Forest as I follow hiking trails or explore wildlife corridors. I particularly enjoy walking the Mendenhall Recreation Area’s Moraine Ecology Trail. It’s easy and picturesque, however, it zigzags through prime black bear habitat. That said, I am trained to read and respond to bear behavior, and having experienced many bear encounters where the bears flee, I don’t fret about bear encounters.

Ambling over the trail, I approach a blind fork in the trail when a rush of disturbed vegetation and a flash of brown snags my attention. I stop. Whatever it is, it’s fleeing. A bear? A dog? A deer? Seems too small for a bear or deer. The air still, the phantom gone I turn left.

Yikes! Yards away, a black bear sow is starring me down, standing her ground, her three cubs scampering away for safety. She is so close I can read her ear tag, “103”. The sow’s posture is not aggressive, but still my heart races, my neck hairs tingle. I must stand my ground. I chant, “Hey bear, I’m here, you’re there, it’s OK.” After what seems longer than it really is, Mom turns away and lumbers away to wrangle her cubs. My life no longer in danger, I think “how cool” then move away opposite the bears.

After 50 yards, I glance back. “Yikes!” Momma, with triplets in tow, is heading toward me. This time, I step 30 yards off the trail to let them swagger by. The cubs check me out, but Mom never glances my way. She knew I was not a threat. I cautiously watch the furry family amble down the trail where they duck into the trees. Once again regaining my composure, I think, “how cool,” and head in the opposite direction of the bears.

Five minutes down the trail, “YIKES!” Tumbling out of the vegetation 25 yards ahead are the three cubs. But, where is Mom? Beside me, behind me? Once again, my neck hairs tingle. Spotting me, the trio dart into the trees. Again, “how cool,” and head down the trail while listening and watching intensely for the sow.

Shortly thereafter, I arrive at my final destination where I find the black bear family already there grazing on meadow grass. No wonder we kept crossing paths. This time, however, all is good for I am standing on a bear viewing platform, six feet above the bears. “How cool.”
Voice From the Past Echoes Today


Opinion: In The Shadow Of Protests, Turn To Ralph Ellison
https://www.npr.org/2020/06/06/871316525/opinion-in-the-shadow-of-protests-turn-to-ralph-ellison

When words from the past touch you, it is magical. When voices from over 60 years ago describe with graphic detail the social injustice of today, it carries magnified meaning. When I heard this portion of Ralph Waldo Ellison’s “The Invisible Man” being read over the radio, I had to pull my vehicle over on the way to my scout camp presentation and absorb its meanings. This is not H.G. Wells’ book nor Ralph Waldo Emerson – this is more important. Ellison’s words from 1952 are as poignant and visceral today as when they were printed 68 years ago. This is the first two opening paragraphs of his award-winning book:

I am an invisible man. No, I am not a spook like those who haunted Edgar Allan Poe; nor am I one of your Hollywood-movie ectoplasms. I am a man of substance, of flesh and bone, fiber and liquids - and I might even be said to possess a mind. I am invisible, understand, simply because people refuse to see me. Like the bodiless heads you see sometimes in circus sideshows, it is as though I have been surrounded by mirrors of hard, distorting glass. When they approach me they see only my surroundings, themselves, or figments of their imagination - indeed, everything and anything except me.

Nor is my invisibility exactly a matter of a biochemical accident to my epidermis. That invisibility to which I refer occurs because of a peculiar disposition of the eyes of those with whom I come in contact. A matter of the construction of their inner eyes, those eyes with which they look through their physical eyes upon reality. I am not complaining, nor am I protesting either. It is sometimes advantageous to be unseen, although it is most often rather wearing on the nerves. Then too, you’re constantly being bumped against by those of poor vision. Or again, you often doubt if you really exist. You wonder whether you aren't simply a phantom in other people’s minds. Say, a figure in a nightmare which the sleeper tries with all his strength to destroy. It’s when you feel like this that, out of resentment, you begin to bump people back. And, let me confess, you feel that way most of the time. You ache with the need to convince yourself that you do exist in the real world, that you’re a part of all the sound and anguish, and you strike out. ...

Excerpted from Invisible Man by Ralph Ellison. Copyright © 1995 by Ralph Ellison. All rights reserved.

Weekend Edition host Scott Simon concludes, “The words of Ralph Ellison, as this weekend thousands peacefully assemble across the country to make lives that have been lost, squandered and crushed visible to America.”

To hear or read the entire NPR story, go to the link above.
To learn more about the life and writings of Ralph Waldo Ellison go to:

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