

Communicating the Science of Boston Harbor Islands A Second Century Stewardship Workshop



September 2021
Schoodic Institute at Acadia National Park

**SECOND CENTURY
STEWARDSHIP**

Science for
America's
National Parks

Communicating #ParkScience

Two overarching “rules”

- Science is a process – a pursuit of knowledge - practiced *by people*. Science is not what we know, but *how we know it*.
- Science is not the *only* way - or the best way - to pursue knowledge.

Two-rule Test

- Are we including *how* we know this information, and *who* studied it?
- Can we acknowledge other perspectives and ways of knowing?

HOW TO DEAL WITH ECO-MUGGLES

Ever meet someone who doesn't think climate change is real? It's hard to believe but there are still many people who refuse to accept scientific facts and admit what's happening. When it comes to things like global warming, these are the **'eco-muggles'** of the activist world. They are like the muggles of Harry Potter lore, who lack any sort of magical ability.

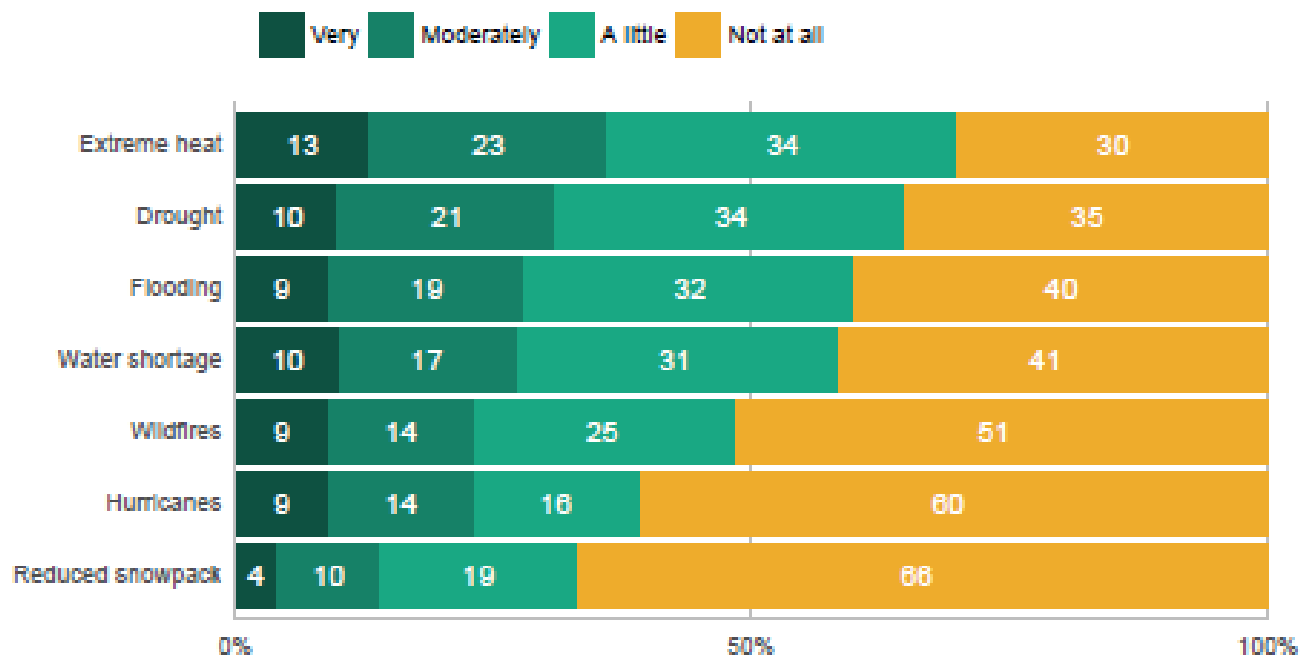
Young activists are often told they don't know what they are talking about. They hear comments like, "Why should anyone believe you?" or "What you're saying is ridiculous!" The best way to respond is to stay calm and polite (as hard as that might be). **Here are four ways to respond to eco-muggle smack-downs:**

Some approaches to sharing science

- Make it local.
- Make it real.
- Make it positive.
- Make it trendy.
- Make it relevant.
- Make it human.
- Make it personal.

Make it local.

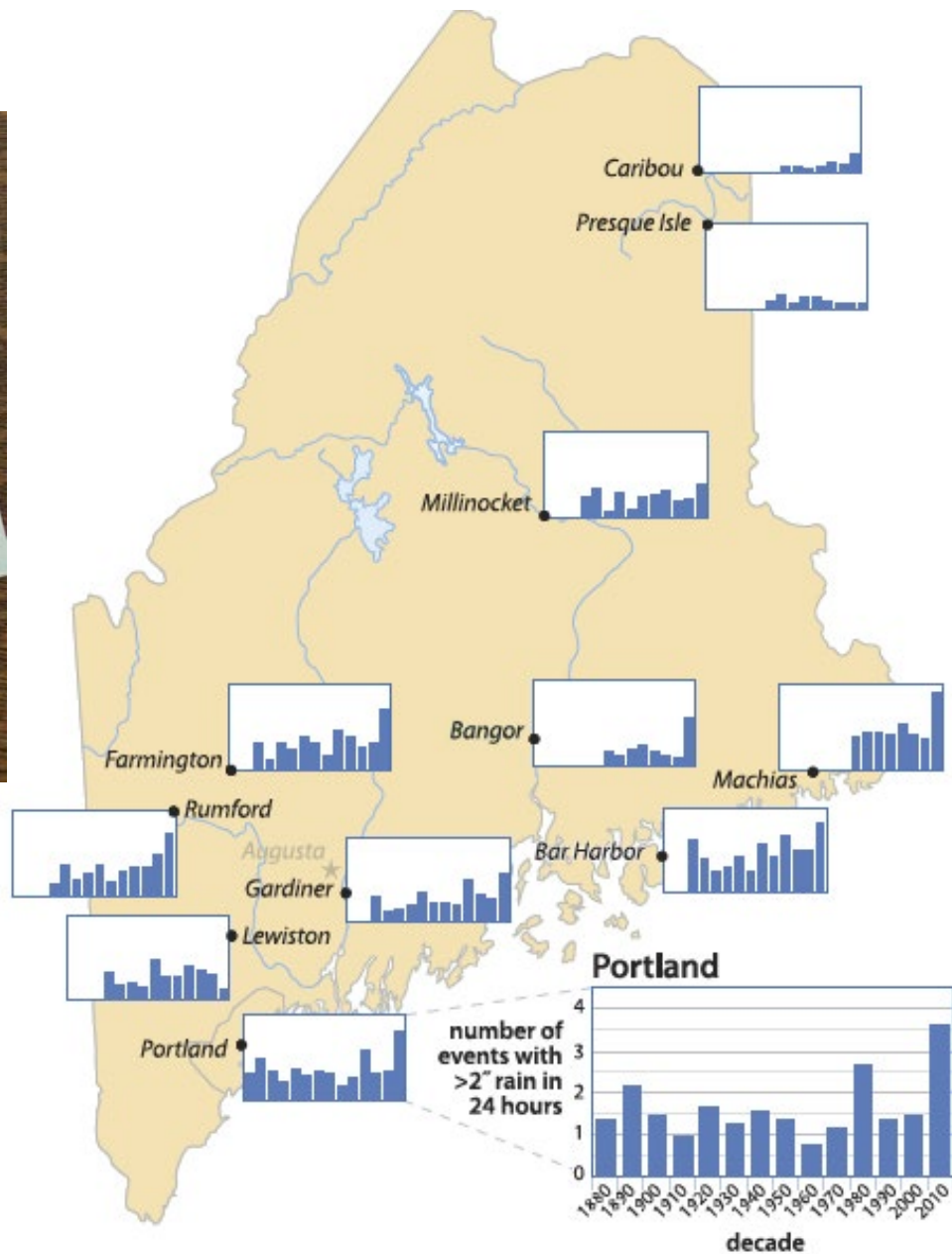
A majority of Americans are worried about harm from extreme events in their local area



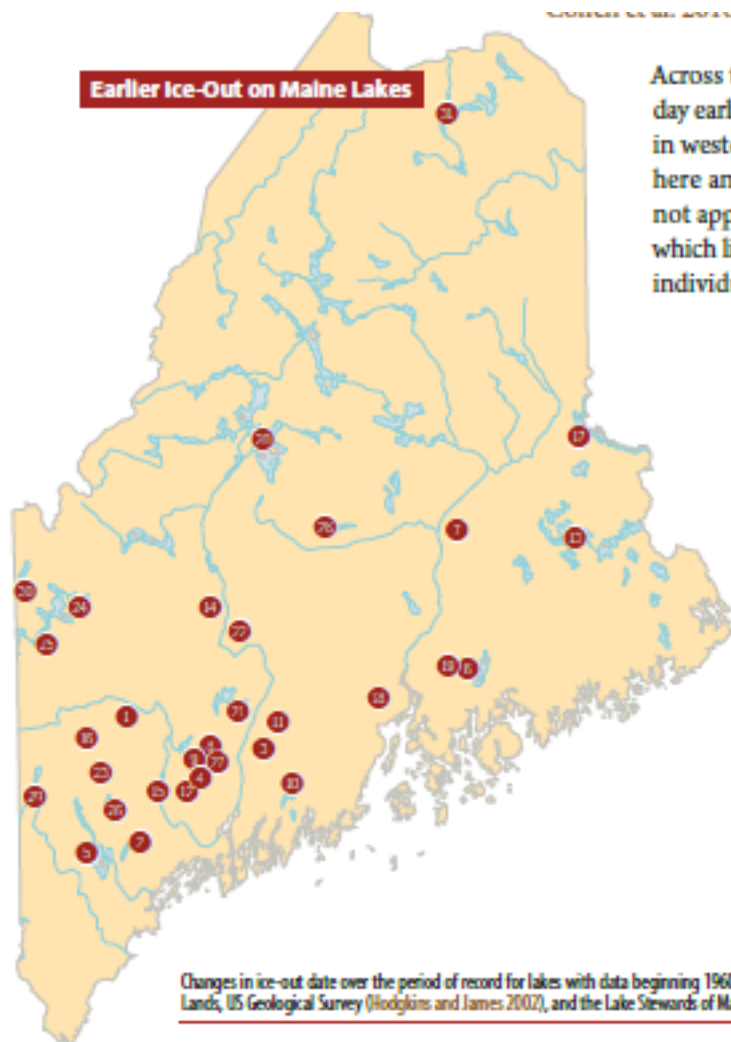
How worried are you that the following might harm your local area?

April 2019





Earlier Ice-Out on Maine Lakes



Across the state, lakes are experiencing earlier ice-out, ranging from one day earlier at Eagle Lake to more than three weeks earlier at Worthley Pond in western Maine, based on a small subset of lake ice-out dates analyzed here and consistent with the findings of [Hodgkins \(2013\)](#). There does not appear to be a geographic pattern to the changes for this set of lakes, which likely reflects the relative dominance of local climate conditions and individual lake characteristics.

Map	Lake Name	Number of days ice-out has shifted earlier	Map	Lake Name	Number of days ice-out has shifted earlier
1	Worthley Pond	24.8	16	Bryant Pond	8.8
2	Crystal Lake	21.3	17	East Grand Lake	8.7
3	Togus Pond	17.7	18	Swan Lake	8.3
4	Sabattus Pond	15.1	19	Phillips Lake	8.0
5	Sebago Lake	14.1	20	Moosehead Lake	7.8
6	Green Lake	12.4	21	Messaloonkee Lake	7.8
7	Cold Stream Pond	11.5	22	Wessenunsett Lake	7.7
8	Maranacook Lake	11.0	23	Pennesseewassee Lake	7.1
9	Cobbosseecontee Lake	10.8	24	Rangeley Lake	6.8
10	Damariscotta Lake	10.6	25	Richardson Lakes	6.1
11	China Lake	10.4	26	Thompson Lake	6.1
12	Lake Auburn	10.3	27	Wilson Pond	5.5
13	West Grand Lake	9.5	28	Sebec Lake	5.3
14	Embden Pond	9.1	29	Kezar Lake	2.4
15	Cochnewagon Pond	9.1	30	Aziscohos Lake	1.3
			31	Eagle Lake	1.0

Changes in ice-out date over the period of record for lakes with data beginning 1960 or earlier. Ice-out dates from the Bureau of Parks and Lands, US Geological Survey ([Hodgkins and James 2002](#)), and the Lake Stewards of Maine.

Nor'easters: Our own special kind of storm

HURRICANE (tropical cyclone)	NOR'EASTER (extratropical cyclone)
warm-core cyclone with strong, organized winds	cold-core cyclone, sometimes multiple low centers
originate in tropics and move northwest	originate in mid-Atlantic and move northeast
gets energy from warm water	gets energy from difference in temperature between cold air over land and warm air over water
short-lived (6-8 hours), weakens over time	long-lived (12-48 hours), strengthens over time
wind speeds 74-150+ mph	wind speeds 13-40+ mph
less frequent in Northeast (none to one per year)	more frequent (~30 per year)
affect smaller area (200-300 miles)	affect larger area (1,000 miles)
typically occur June – October	typically occur October – April

Make it real.







Manzanar

National Historic Site
National Park Service
U.S. Department of the Interior



Dig into Public Archeology at Manzanar September 1-5, 2017 Administration Area





Elmer Crow uses this rubber lamprey to raise awareness about an uncharismatic fish.
Amanda Peachner



Pangolin Crisis Fund @PangolinCrisis · Jan 6

There is no animal on Earth like the **pangolin**, yet most people have never heard of them. Despite their relative obscurity, **pangolins** have the unfortunate distinction of being the most illegally trafficked wild mammal in the world. Learn how you can help at pangolincrisisfund.org



🔍 pangolin



Top

Latest

People

Photos

Videos



Smithsonian's NMNH @NMNH · Jan 6

Hanging in there this Monday? Eight species of **pangolin**, including the critically endangered Chinese **pangolin** (*Manis pentadactyla*), live in habitats across Asia & Africa. When threatened, these insect-eaters coil into such tight balls that it's nearly impossible to unroll them.



💬 1

↻ 5

❤ 40



[Show this thread](#)



Possum Every Hour @PossumEveryHour · 8h



↻ 33

❤ 318



Possum Every Hour @PossumEveryHour · 9h



↻ 124

❤ 856





EVENT IN PROGRESS



Landscape of Change

APR 19, 2021 - OCT 31, 2021

LANDSCAPE CHANGE

About

Members

4

In collaboration with the National Park Service and several nonprofit organizations, we are drawing upon 140 years of scientific information about the Mount Desert Island environment to understand how the landscape has changed over time. We invite the public to join us throughout 2021 in documenting birds, bees, butterflies, and

[Read More >](#)

Project Journal

Overview

3,911

OBSERVATIONS

652

SPECIES

486

IDENTIFIERS

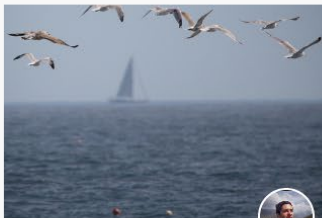
553

OBSERVERS

Stats

Recent Observations

[View All](#)



Gulls, Terns, and Ski...
Family Laridae

6 days ago



Common Eider
Somateria mollissima

1 4 days ago



White-marked Tusso...
Orgyia leucostigma

13 hours ago

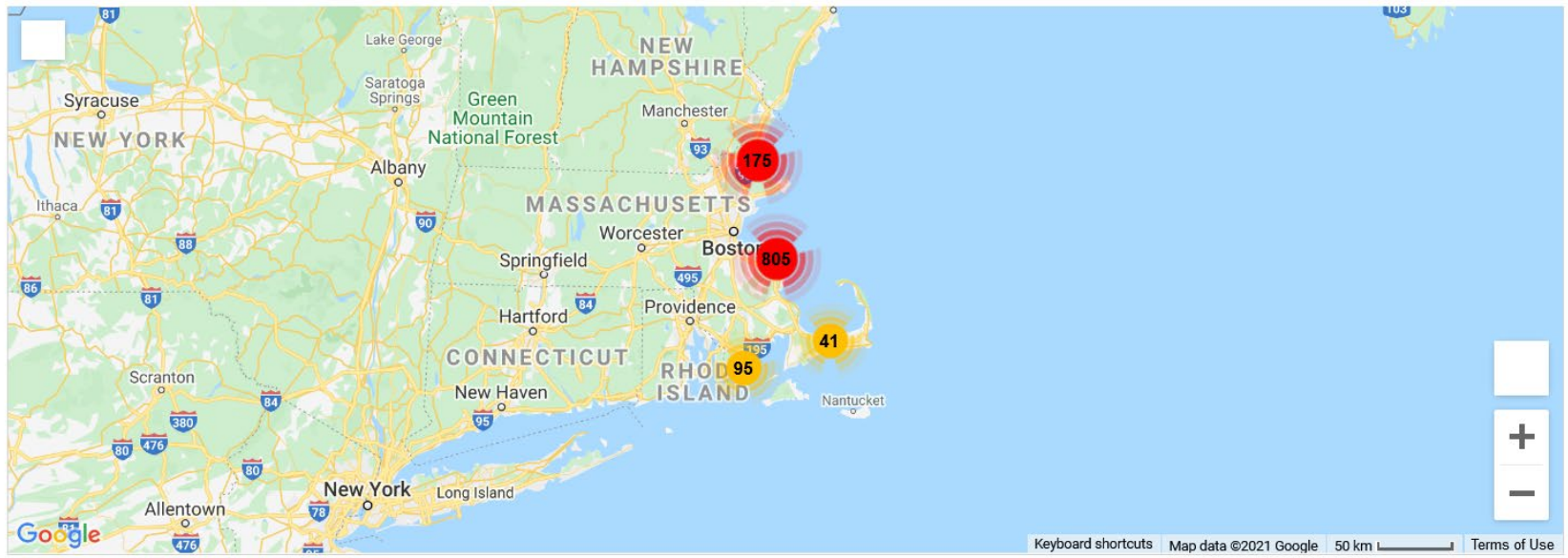


Soothsayer Dart
Graphiphora augur

a day ago



Massachusetts King Tides Photos



NOVEMBER 16TH 11:30 AM - 12:00 PM

KING TIDE LIVE

BOSTON
HARBOR
NOW



0:00 / 25:11



Make it positive.



Counter gloom and doom with action.

What solution can you offer? What can your audience do? What are others doing? What are you doing?

CALIFORNIA TODAY

In California, Even Fire-Resistant Trees Need to Be Protected From Flames

Giant sequoias struggle to withstand the intensity of recent fires.



Make it trendy.





Sections 

The Washington Post
Democracy Dies in Darkness

catherine.schmitt 

Outlook

How peer pressure can help stop climate change

Buying hybrids and solar panels persuades other people to buy them. That dynamic can help stop climate change.

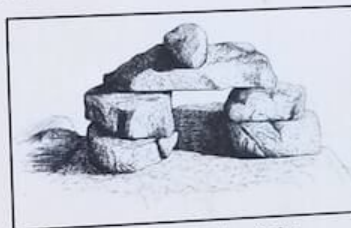


MOST ACADIA HIKERS

LEAVE CAIRNS AS THEY FIND THEM

Adding or removing rocks from Acadian Bates cairns

- misleads hikers
- causes soil erosion and plant loss
- degrades the mountain landscape



Acadian Style Bates Cairn

Introduced by trail builder Waldron Bates in the early 1900s, Bates cairns are an important and unique part of the historic character of Acadia Trails. They also guide hikers and protect the park's fragile mountain landscape.

LEAVE NO TRACE

TOUR OUR RESILIENT COAST



You're invited!

Please join us Saturday June 29, 2013 at 9:00 AM for a tour of coastal properties in York County that are more resilient to flooding, erosion and extreme storm events. Learn from professionals and coastal property owners about the steps you can take to protect your property.



WHEN: Saturday June 29
9:00 AM - 4:00 PM

WHERE: Wells, Old Orchard
Beach and Kennebunk

Registration fee: \$20 includes:

- transportation from Saco Park & Ride to coastal property sites and back to Park & Ride
- morning snacks and coffee
- catered lunch
- information packet

Space is limited to 20
RSVP TODAY!

207-646-1555 EXT. 113
alexander.gray@umit.maine.edu



CONTACT: **MAINE SEA GRANT** FOR MORE INFORMATION AND TO RESERVE YOUR PLACE ON THIS INFORMATIVE TOUR

CALL: 207-646-1555 EXT. 113 OR EMAIL: alexander.gray@umit.maine.edu
<http://www.seagrants.maine.edu/coastal-hazards-guide>

Make it relevant.

independent
sensible
frugal
hard-working
capable
responsible
a “can do spirit,” Yankee ingenuity
Dirigo
love for the outdoors



prefer status quo
reject regulation and oversight
fear change
victims

forward-thinking
pro government action
embrace change
agents

What heritage do we share?



SPRINGFIELD, VERMONT
OUTDOORS

Spring tradition: Anglers vied to catch Penobscot's presidential salmon



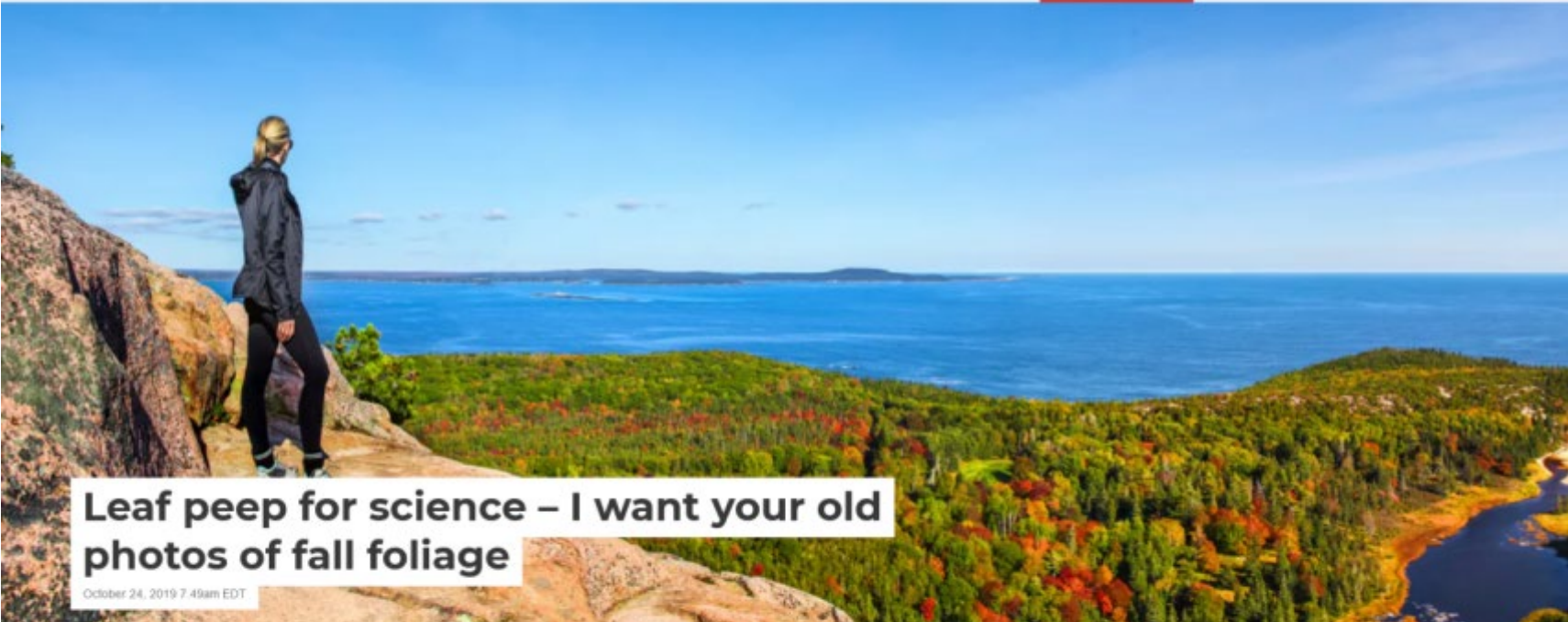
What experiences do we share?

[Home](#) Edition: [United States](#) [Donate](#) [Get newsletter](#)

[Become an author](#) [Sign up as a reader](#) [Sign in](#)

THE CONVERSATION
Academic rigor, journalistic flair

[COVID-19](#) [Arts + Culture](#) [Economy + Business](#) [Education](#) [Environment + Energy](#) [Ethics + Religion](#) [Health](#) [Politics + Society](#) [Science + Technology](#)



Leaf peep for science – I want your old photos of fall foliage

October 24, 2019 7:49am EDT

What can your vacation pix tell scientists? [Try Media/Shutterstock.com](#)

Email

Twitter

Facebook

LinkedIn

Print

12

373

Every October, when I was growing up in Massachusetts, my parents would check out the fall foliage reports and determine where we were going to drive to see the colorful leaves. And they still do. In New England, leaf peeping, as it's called, is a [billion dollar industry](#) and millions of people travel to the region during foliage season.

In Maine's Acadia National Park, visitation has [more than doubled in September](#)

Author



Stephanie Spera

Assistant Professor of Climate Change & Remote Sensing, University of Richmond

Disclosure statement

Stephanie Spera receives funding for this project from the Second Century Stewardship, a collaboration between the


What memories are important to us?

"The dam is not going to last forever. It's not permanent. Eventually Mother Nature will take the dams over. Let's not wait until that point. There may be a better way to memorialize the mills and preserve the historic integrity of the sites."

- *Andy Goode, Atlantic Salmon Federation*



Seizing opportunities to diversify conservation

Rachelle K. Gould¹  | Indira Phukan² | Mary E. Mendoza³ | Nicole M. Ardoin⁴ | Bindu Panikkar⁵

¹Rubenstein School of Environ

Engaging with historical narrative to understand diverse environmental experiences and relationships (Ladson-Billings, 1998) may help address these issues holistically. The national-scale, narrative-based conversations described above are constructive, albeit painful, ways to address historical trauma. At a site-specific scale, the U.S. National Park Service embraces narrative in multiple ways: working with Native communities to memorialize places of violence and loss (e.g., the Colorado site of the Sand Creek Massacre); creating sites to recognize historical injustice (e.g., Birmingham Civil Rights National Monument); and highlighting marginalized narratives (e.g., Yosemite ranger Shelton Johnson's historical reenactment of the park's Buffalo soldiers (Johnson, 2010)). Although such conversations are often challenging they create space for diverse peoples to acknowledge their experiences (Kelman, 2013).

stasis: heart of the argument

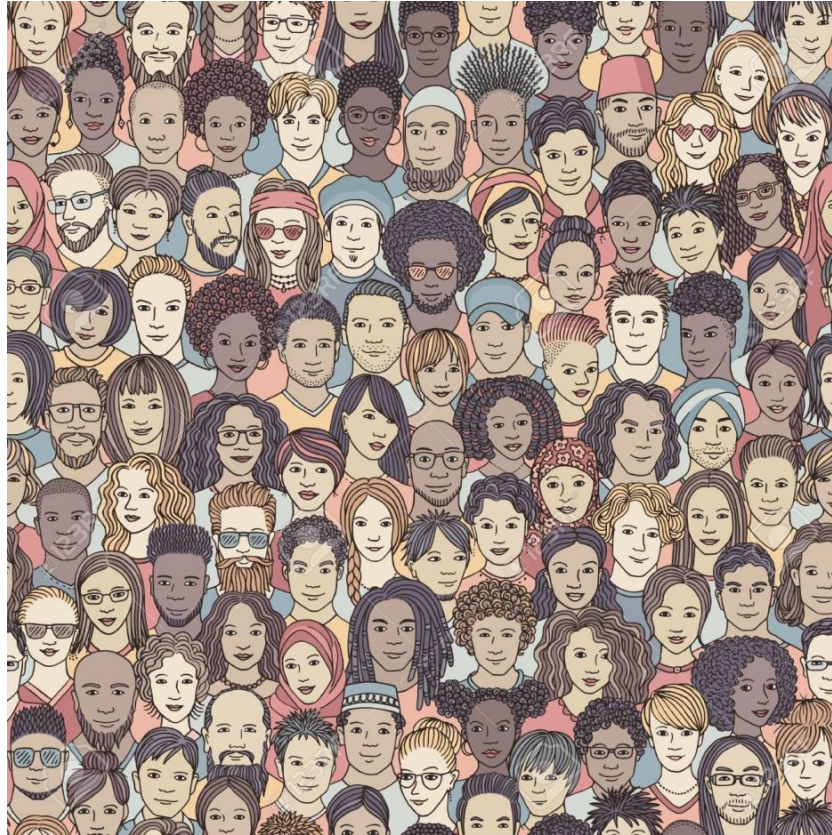
1. Conjecture: Does something exist? Did an event happen? Do agree with your audience that something exists or happened?

2. Definition: How can the thing or event be defined? What kind of thing or event is it? Do you and your audience agree with how to classify the thing or event?

3. Value: How should the thing or event be valued? What is its quality? Was it right or wrong? Bad or good? Happy or sad? Do you agree about the value or seriousness or relevance?

4. Policy: What should I/we do? Should this thing be submitted to formal procedure? Should something be done about this?

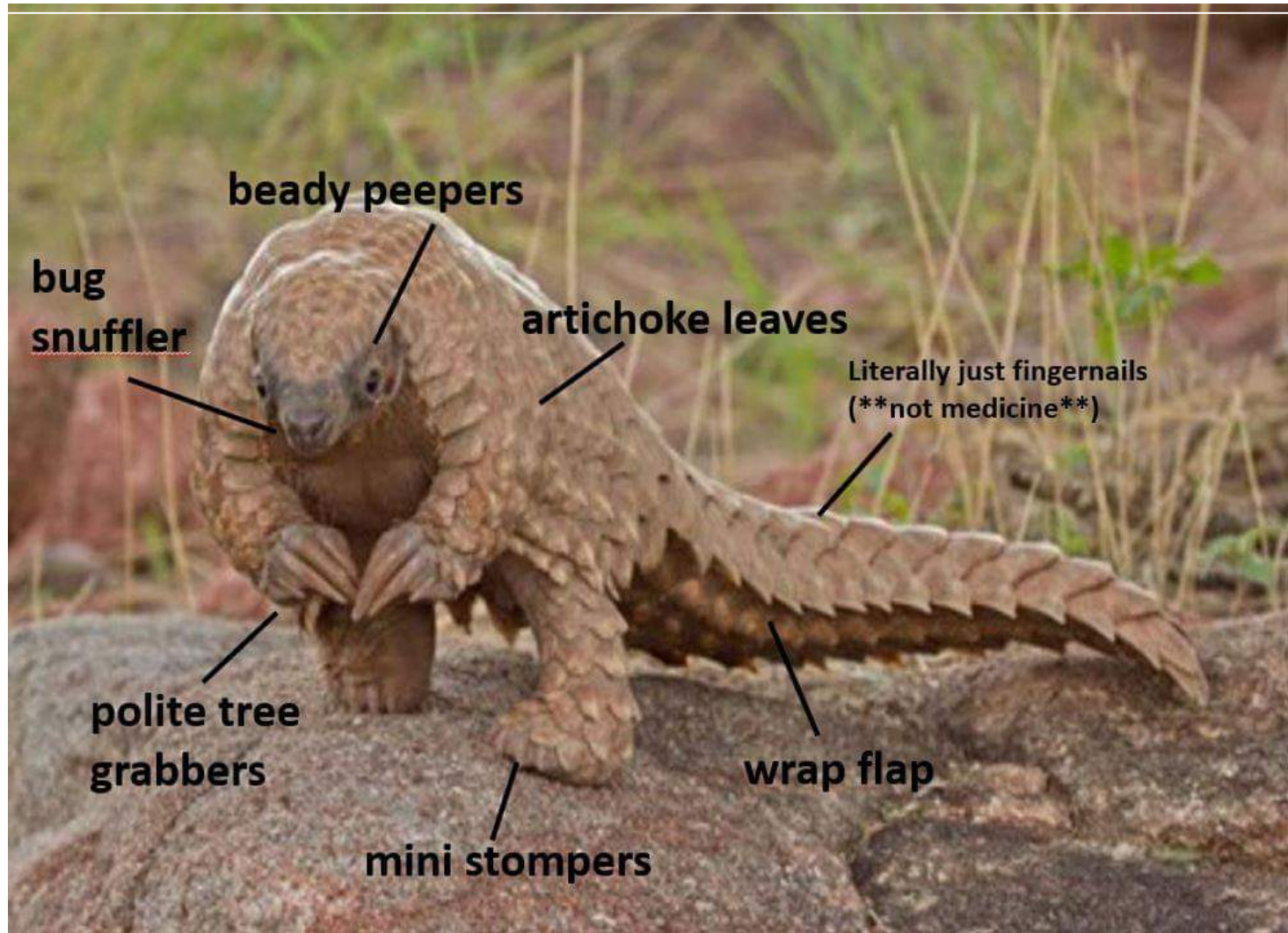
Make it human.



Everyone likes to laugh.



Everyone likes to laugh.

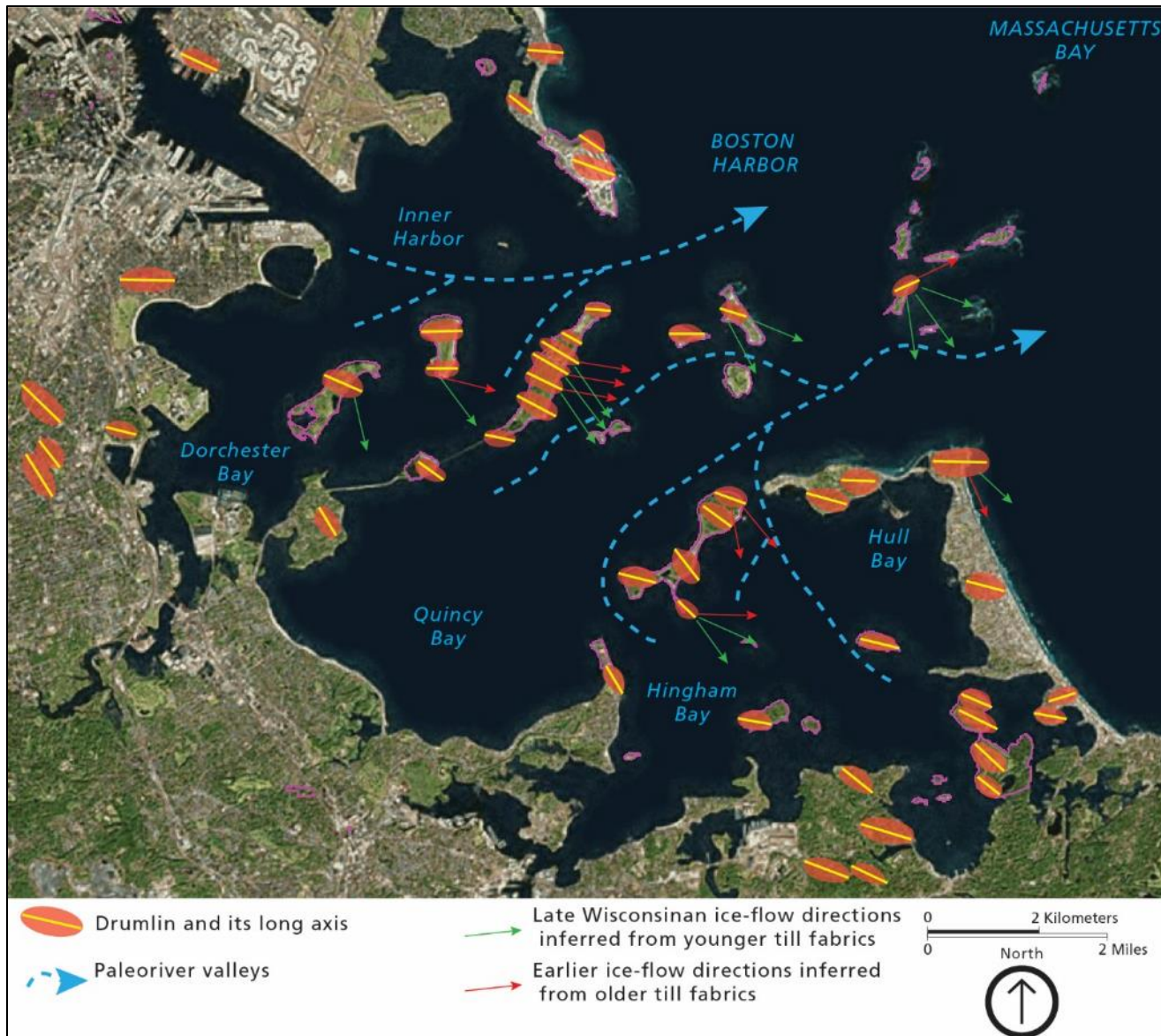


#UnscienceAnAnimal by @masselouxgarou

Everyone is curious.



The only partially - drowned drumlin field in North America





Biological Soil Crust Activity

Biological Soil Crust

Don't Bust the Crust! It's Alive!

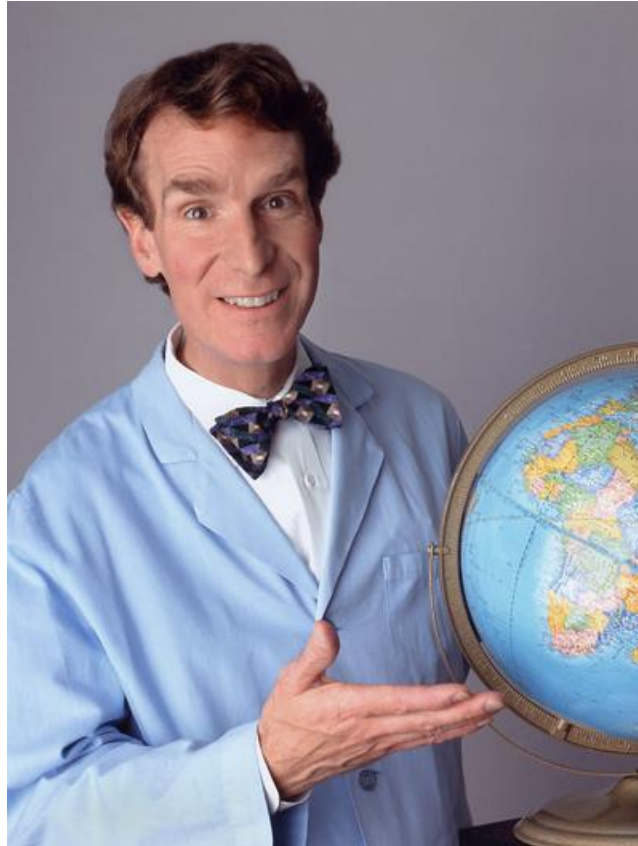
The plant communities of Arches National Park are dependent upon microbial communities called biological soil crusts or cryptobiotic crusts. These communities – made up of cyanobacteria, green algae, fungi, lichens, mosses, and other tiny organisms – create a matted crust atop the sand that retains moisture, creates nutrients, and provides grasses and shrubs a foothold in the sand.

Once damaged, crusts may take many years to grow back. Areas that have been stripped of crusts are vulnerable to erosion, flooding, dust storms, loss of organic materials, and invasion by non-native weeds that thrive on disturbed soil.

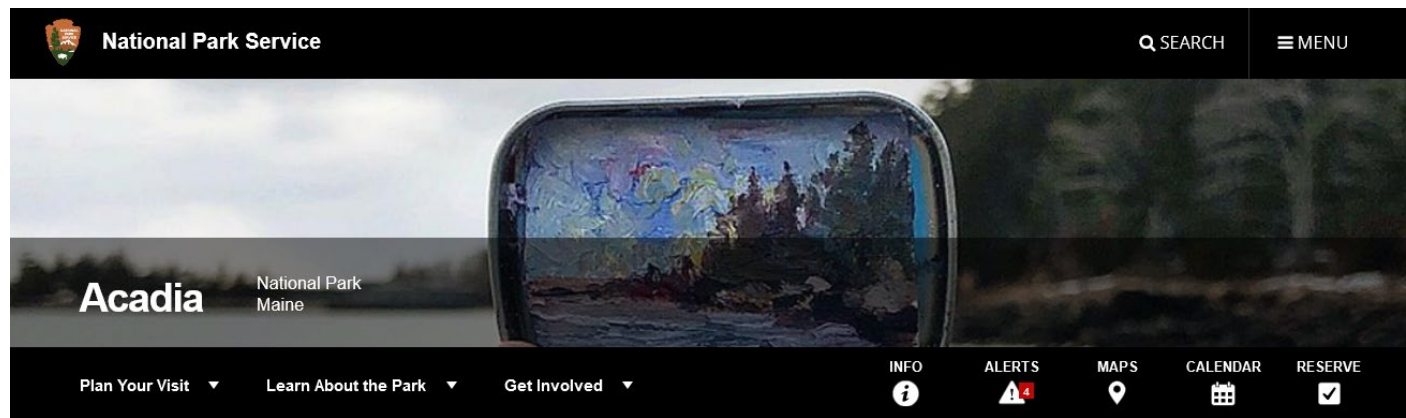
Take a Closer Look

Looking through an electron microscope, one can see the sheaths and filaments that make up the crust. Additional scientific analysis reveals how crusts function.

Everyone likes to have fun.



Everyone seeks enrichment.



[NPS.gov](#) / [Park Home](#) / [Plan Your Visit](#) / [Places To Go](#) / [East Side](#) / [Carriage Roads](#)

Carriage Roads

Road to Recovery? Park Staff Assess and Repair Storm Damaged Historic Carriage Roads



On June 9, 2021 a rainstorm dropped a record-breaking 5+ inches of rainfall on Acadia National Park in 3 hours. Park stream gauges showed flood heights of almost 10 feet at times. Acadia's 45-mile historic carriage road system suffered extensive damage, as did trails and paved roads. Upwards of 300-400 tons of carriage road surface material was swept into the woods. As climate change intensifies storms, can park staff keep up?

Parks: Acadia National Park

Your Questions About Food and Climate Change, Answered

**How to shop, cook and eat in a
warming world.** APRIL 30, 2019

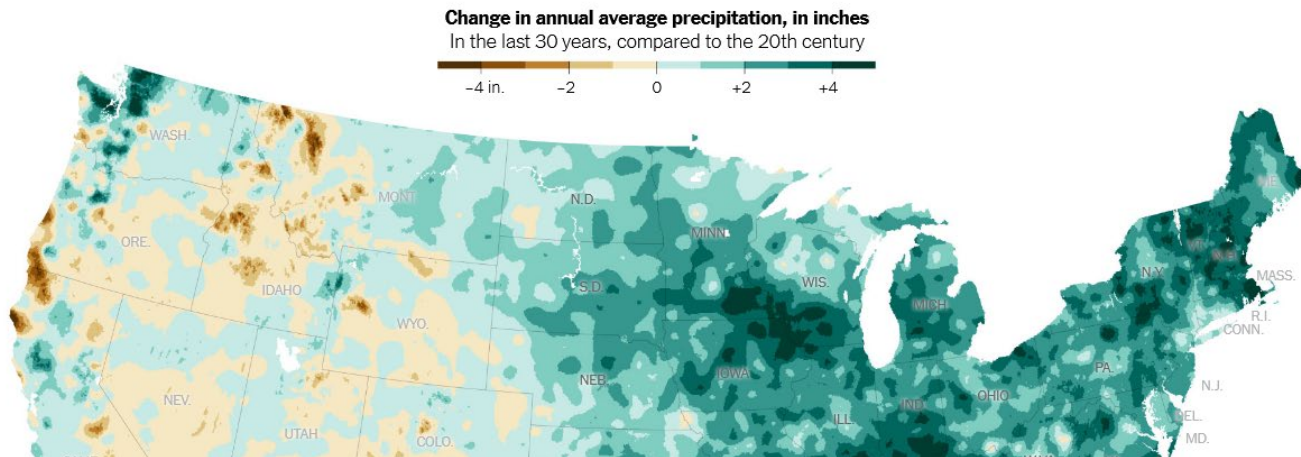


Everyone likes to dig in.

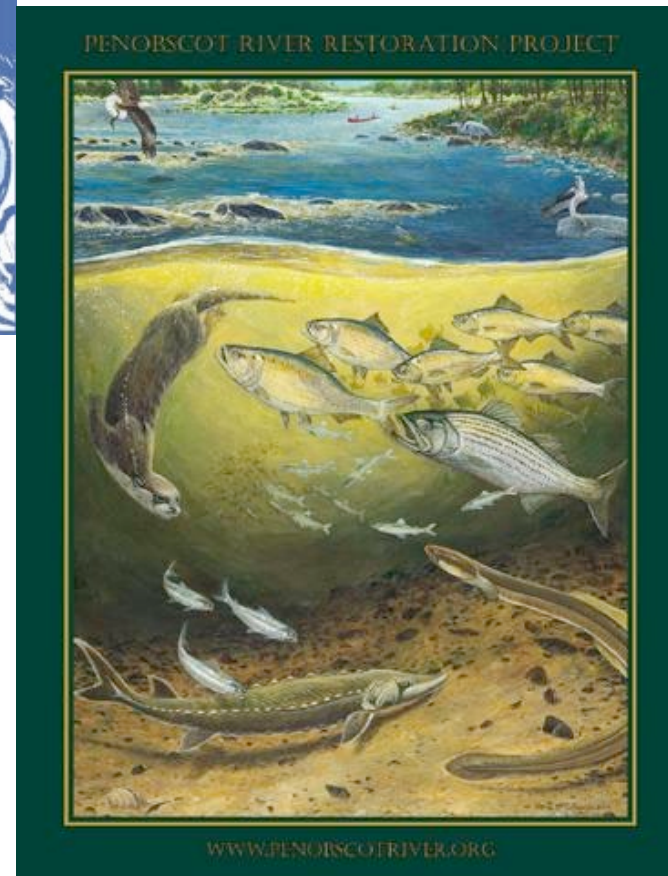
These Maps Tell the Story of Two Americas: One Parched, One Soaked

By Aatish Bhatia and Nadja Popovich Aug. 24, 2021

The country, like most of the world, is becoming both drier and wetter in the era of climate change. It depends where you live.



Everyone likes beauty.



DOUBLE ISSUE

JULY 20 / JULY 27, 2020

ONE LAST CHANCE

THE DEFINING YEAR FOR THE PLANET BY JUSTIN WORLAND

PLUS THE DALAI LAMA, GRETA THUNBERG, VANESSA NAKATE, OLIVER JEFFERS, STACEY ABRAMS, ANGELINA JOLIE & MORE



time.com

FutureSHORELINE

*A land and floating installation in the Fort Point Channel,
Boston, MA.*





Denali

National Park & Preserve
Alaska

Plan Your Visit ▾

Learn About the Park ▾

Get Involved ▾

INFO



ALERTS



MAPS



CALENDAR



RESERVE



[NPS.gov](#) / [Park Home](#) / [Get Involved](#) / [Denali Climate Anthology](#)

Denali Climate Anthology

It is the official position of the National Park Service that climate change is real, and that we all share a stewardship responsibility to reduce its impact on park resources for future generations.

Mitigating the effects of climate change is the story of our time. It is accepted within the scientific community that these effects are felt more keenly in Alaska than in temperate regions of the planet. Research indicates that within park boundaries vegetation is changing, average annual temperatures are rising, wetlands are shrinking, glaciers are thinning, and permafrost is melting. While these stories reflect tremendous impact, they have not been widely or comprehensively shared.

This anthology seeks to tell larger stories of climate change in Denali as actual stories, as five accomplished local authors describe the effects of a changing climate on the lives and landscape they treasure here.

Essential(ly human) Questions

What about your topic

- Is intriguing, complex, and problematic?
- Is rooted in the issues and problems facing society today?
- Serves as a catalyst for critical thinking and compelling discussion?
- Cannot be easily solved or answered?
- Expresses broad social relevance?
- Provides a springboard from which to raise more questions?

Some examples of possible essential theme questions:

- How should a culture measure the value of land?
- When is violence just?
- Who deserves the right to access limited natural resources?
- How do we decide what belongs in a community?
- When is human interference in nature appropriate?
- What responsibility does society have to protect the environment?

A Quick Guide to Program Elements

Compiled from a variety of sources by Dan Irelan, Denali National Park & Preserve

Opportunities for Intellectual connections

Which connection opportunities seem to bring about:

awareness	insight	understanding of
cause and effect	mindfulness	concepts
comprehension	perceptiveness	unearthing
discernment	reasoning	unfolding
discovery	recognition	wisdom...
enlightenment	revelation	

Multiple Intelligences...

...and some techniques that help address them

Verbal

Stories, quotations, description, explanations, compare and contrast, listing, voice variation, silence, examples, songs, journaling/poetry writing

Visual/spatial

Illustrations, props, body language, gestures, "I Spy" game, demonstrations, guidebooks, art/sketch activity

Interpersonal/social

Role playing, participation, questioning, problem solving, team activities, drama, activities, scavenger hunts, field guides/cards, discussion questions/pair share, debates, role playing, asking for volunteers/assigning tasks

Intrapersonal/reflective

Guided visualization, stories, rhetorical questioning, journaling, sketching, moments of silence

Naturalist

Games, role playing, sensory involvement, contrast natural/unnatural features, certain props, ID'ing with field guides, explanation connecting human & natural elements

Mathematical/logical

Statistics, comparisons, analogies, presentation of evidence, listing, charts/graphs

Musical/rhythmic

Music (with or without lyrics), chants, audio clips, listening exercises, silence, mnemonic devices, triphammers (repeated phrases), recorded animal or natural sounds

Kinesthetic/physical

Demonstrations, body props, drama, re-enactments, scavenger hunts, demo/teach an outdoor skill, touch/tactile activity

Techniques that can be Interactive

Role Playing

Recall Question (ask to recall something already discussed)

Application Question ("How do we humans adapt to winter?")

Field Guides and Plant ID Cards

Sharing Circle (each visitor shares an experience or a response)

Gathering (visitors contribute to a group composition)

Scavenger Hunt or Exploration

Rapport • Quiz • Props • Song

Call & Response • Demonstration • Icebreaker

Opportunities for Emotional connections

Which connection opportunities seem to provoke or inspire:

admiration	contentedness	fright	respect
aggravation	contrition	frustration	reverence
amazement	curiosity	gladness	sadness
anger	delight	gratitude	satisfaction
anguish	despair	grief	sentiment
apprehension	devotion	happiness	shame
astonishment	disappointment	horror	sorrow
aversion	disgust	joy	surprise
awe	dismay	loyalty	sympathy
bewilderment	distress	nostalgia	tranquility
bliss	dread	passion	veneration
comfort	elation	pity	vexation
commiseration	empathy	pride	wonder
compassion	esteem	regret	worry
concern	exasperation	relief	yearning...
consternation	exhilaration	remorse	

Universal Concepts

"understood by almost everyone"

Love	Death
Freedom	Spirit
Higher Power	Justice
Passion	Hate
Adventure	Tragedy
Grace	Joy
Sorrow	Birth
Mystery	Change
Family	Tradition
Violence	Sacrifice
Freedom	Family
Passion	Parenthood
Loss	Aging
Renewal	Fear
Pain	Home
Power	Community
Humor	Beauty
Survival	Nature
Sacrifice	Bravery
Quest	Identity

Ideas for

← Transitions →

- ❖ Bridge one point to the next – make a logical flow between them.
- ❖ You can revisit your overall **theme**, then connect it to the next point.
- ❖ You can use a **technique**, such as a question or activity to recall question – "What did we observe earlier...?" – might make a good start to a transition.)
- ❖ On a guided hike/conducted activity:
 - Does your transition provide a chance to observe or immerse in surrounding resources?
 - Do you follow up your transition at the beginning of the next stop?
- ❖ If you are having a hard time creating a transition between two points, **revisit your program structure**: are your main points really in a logical order? Is each point relevant to a cohesive program?

ABCD's of Objectives

These can help focus and better define your objectives:

Audience Who is the target for your objective?

"Visitors who take the quiz will..." "3/4 of visitors will..."

Behavior What will the audience do, or be able to do?

"...recite three plant adaptations to cold weather"

Conditions When or where will they do it?

"At the end of the talk..." "During the hike..."

Degree How much will be needed to indicate success?

"will recall at least 3 steps to take in a bear encounter."

Some Possible Audiences for Objectives

(other than "visitors", or a fraction of them)

- First time visitors...
- Families with children...
- Visitors who stay after to talk...
- Visitors who express discomfort/unease at the beginning...
- Visitors who ask questions...
- Visitors who answer questions...
- Visitors who volunteer to...

Make it personal.

Zoom Meeting

Recording

 Melissa Vorn	 Catherine Schmitt (she/her) Schoodic Institute	 Sarah Hooper (she/her) Schoodic Institute	 John Lampley (He-Him)	 Cassie
 Liz Cook she/her	 Daniel Kruchten	 Rachel Vincent (she/her)	 Rebecca Shoer she/her	 Merrin Meltzer She/Her
 Jen Steele (she/her)	 Laura Yates (she/her)	 Natalia Bayona	 Katie Woods, NPS (she/her)	 Thea Jackson (she/her)
 Celena Illuzzi	 Tori Royal they/she	 Marc Albert (he/him)	 Tommy McNamara	 bcurell
 Jen Antocci she/her	 Eric Hanson Plass_NPS Boston	 Cathy Radonic (she,her) National Parks of Bo...	 Emily Parnell (She/Her)	 Adinah Greene



THE HOT LISTER: NO. 53

Men dominate climate science. She made it
to the top – and did it her own way.





Getting under the desert's skin: Biologist Jayne Belnap

Michelle Nijhuis | Jan. 19, 2004 | *From the print edition*

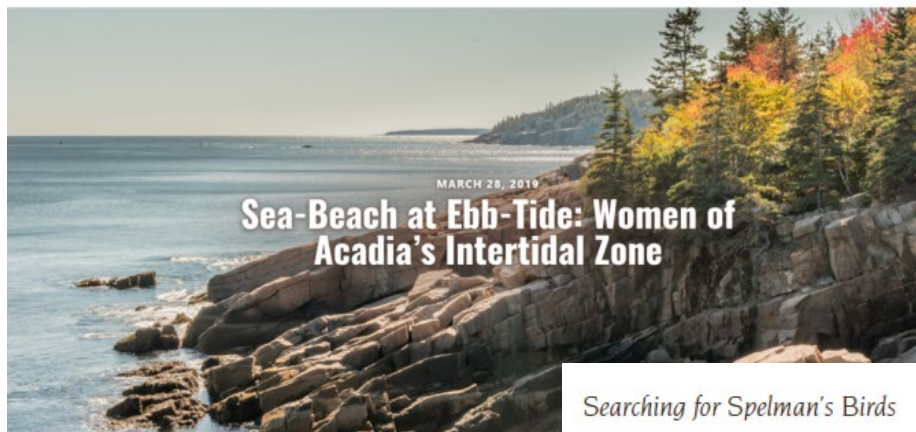


PRINT



SYLVIA SHARNOFF

The scenery of southeastern Utah is hard to miss. Steep redrock canyons plunge into long and lazy riverbends; wind-sculpted stone



POSTED IN [COMMUNICATION](#) [MARINE ECOLOGY](#) [SCIENCE](#)

By Catherine Schmitt, Science Communication Specialist

To find these creatures, to study their habits and organization, to consider the work into the realms of science...the simple observation of the curious objects which lie a pastime. – Augusta Foote Arnold, 1901

Science is of no country and of no sex. The sphere of woman embraces not only the
1856

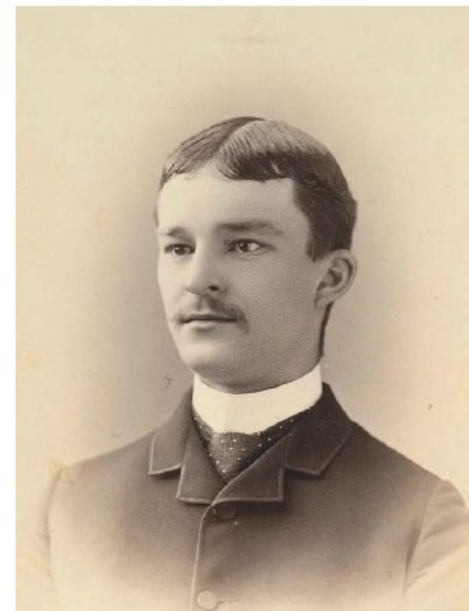
Searching for Spelman's Birds

By Catherine Schmitt and Rich MacDonald

No man who concerns himself with birds can do so without having, or developing, an affection for them.

– Robert Henry Welker, *Birds and Men*

The birds are real. Feathered skins reshaped with cotton stuffing, they are nearly whole. And vibrant: bright orange crowns, yellow rumps, hints of iridescence in the blue, downy fluff of a sandpiper chick, rusty-tailed hermit thrush, bright yellow bellies, round white spots on a black back. Their legs are crossed, tied just above the feet with wire and tags printed with "Collection of Henry Spelman." Beneath, in handwritten script, are the scientific names of the birds and the locations where they were collected between 1880 and 1883 on Mount Desert Island, Maine. In the quiet air of a Harvard basement, their song reached across a century and more to pierce the silence with their story.

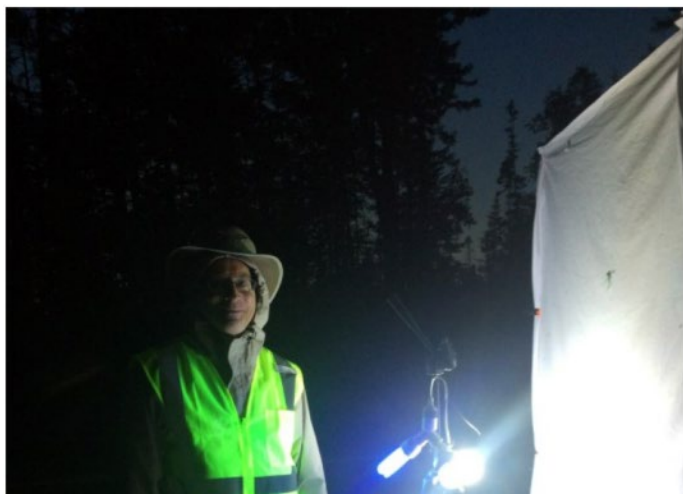


National Park Service

ARTICLE

Frank Distefano is Acadia's "Moth Man"

[Acadia National Park](#)



Puma Profiles

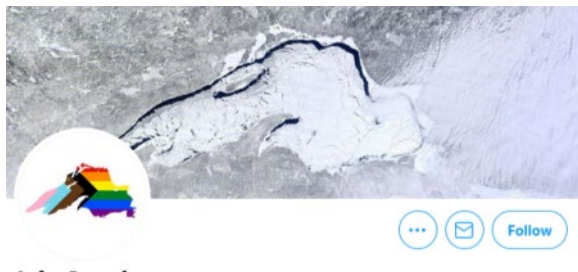


An uncollared female mountain lion in the Verdugo Mountains rubs her cheek against a log. Later, adult male P-41 visited this same location and took notice of the scent.

The Loneliest Whale in the World?

An obscure scientific brief and a mass audience wanting to believe





Lake Superior

@LakeSuperior

I am the greatest lake of all time. G.L.O.A.T. [she/her] #bigbeautifulwater

patreon.com/lakesuperior Joined March 2009

293 Following 39.2K Followers

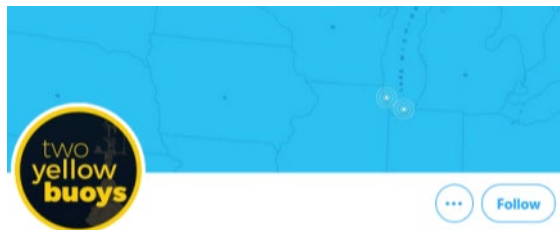
Followed by Dr. Jacquelyn Gill, Keweenaw NHP, and Catherine Schmitt

Tweets Tweets & replies Media Likes

Pinned Tweet

Lake Superior @LakeSuperior · Jun 14, 2018
Without me, they would be called the Good Lakes.

33 603 3K



Two Yellow Buoys

@TwoYellowBuoys

We hang out in #LakeMichigan, recording and transmitting real-time conditions to the world. Owned and cared for by @ILINSeaGrant, @PurdueFNR, @PurdueCE.

Wilmette, IL; Michigan City, IN isseagrant.org/buoys/how-buoy...
Joined December 2015

529 Following 2,539 Followers

Followed by Sharing Science and Woods Hole Sea Grant

Tweets Tweets & replies Media Likes

Pinned Tweet

Two Yellow Buoys @TwoYellowBuoys · May 11
ICYMI, we're in #LakeMichigan! Live #data every 10 minutes all day every day. Some kinks still being worked out, but find it:
isseagrant.org/wilmettebuoy/
isseagrant.org/buoy/
gibuoys.glos.us
ndbc.noaa.gov



Jordan Pond Buoy

@JPbuoy

Joined December 2014

60 Following 35 Followers

Followed by Schoodic Institute, Allyson K. Jackson, and Dr. Rachel Anne Fowler

Tweets Tweets & replies Media Likes

Jordan Pond Buoy Retweeted

Dr. Rachel Anne Fowler @rachelanne229 · Apr 27, 2020
So excited for the opportunity to dive into this project on @AcadiaNPS lakes!

Schoodic Institute @SchoodicInst · Apr 27, 2020
Congratulations to the new 2020 #ParkScience fellows!
twitter.com/SCSParkScience...

1 1 10



A witness tree

@awitnesstree

Witnessing life as a tree in a changing environment for more than a century. Views are my own - sort of (data translated by scientists and communicators at HF).

Harvard Forest, Massachusetts
harvardforest.fas.harvard.edu/witness-tree-s... Joined July 2018

0 Following 9,128 Followers

Followed by Plant Love Stories | Follow #BlackAg week!, Colleen Hitchcock, and 3 others you follow

Tweets Tweets & replies Media Likes

Pinned Tweet

A witness tree @awitnesstree · Jul 17, 2019
Hello, World! I am a century-old red oak at Harvard Forest in MA: one of the oldest living organisms on the internet! Follow me to learn more about my life in a changing environment. For more on info how I work, go to:
harvardforest.fas.harvard.edu/witness-tree.



Tweeting Tulip Tree

@TweetTulipTree

The Tweeting Tulip Tree at The Morton Arboretum shares its life experiences, tree care advice, and the cool ways scientists study trees!

The Morton Arboretum, Lisle IL mortonarb.org Joined March 2020

767 Following 599 Followers

Followed by Wason Lab, Schoodic Institute, and Dr. Caitlin MacKenzie

Tweets Tweets & replies Media Likes

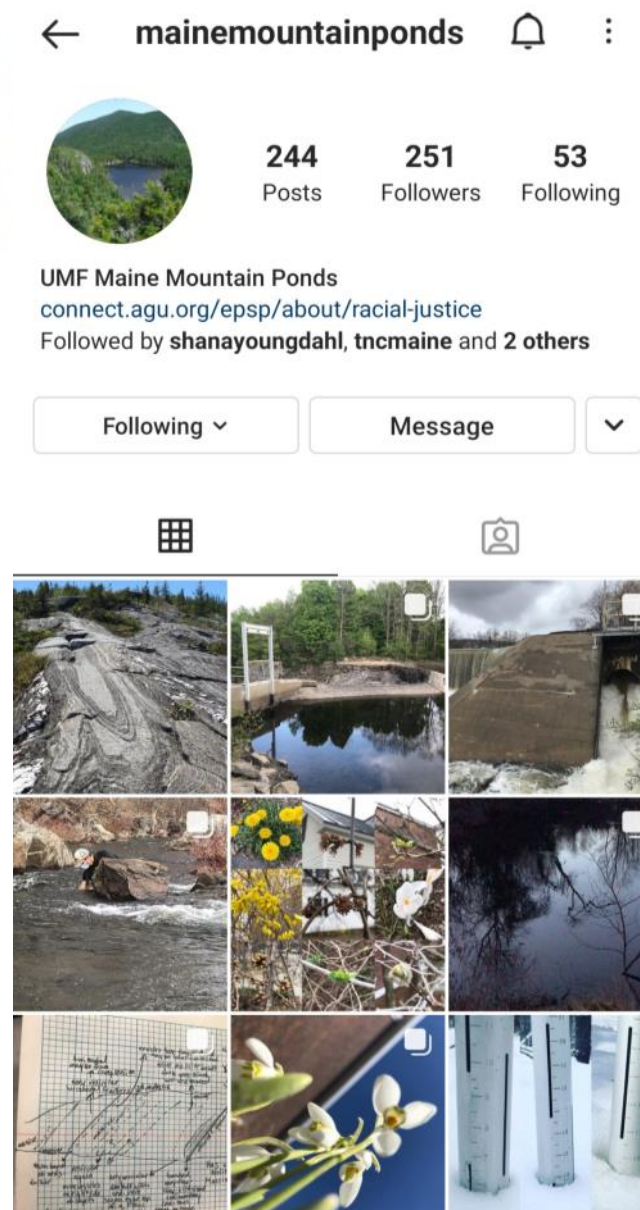
Pinned Tweet

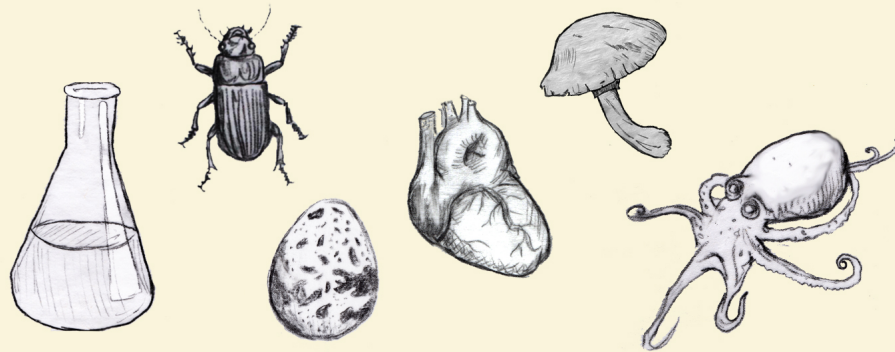
Tweeting Tulip Tree @TweetTulipTree · Apr 24, 2020
Hi everyone! I'm the #TweetingTulipTree at the Gateway to Tree Science @MortonArboretum. I'm here with researchers to share about my life, facts and tips about #trees, and what's happening around me in #nature. I'll show videos, too. Follow my adventures! #mortonsci #ArborDay

Engaging your audience: story

What's
your
story?

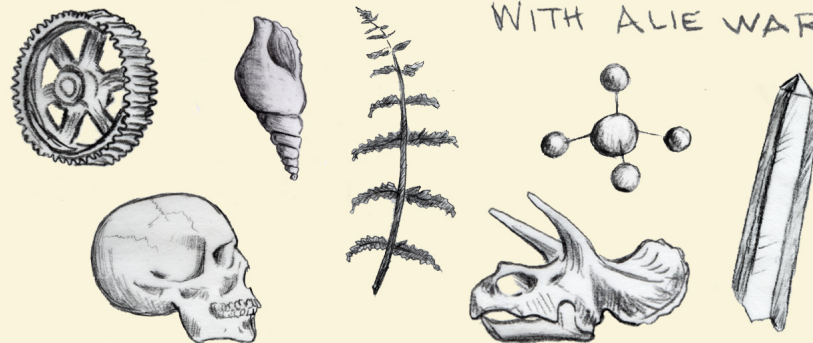






ologies

WITH ALIE WARD





Edward Fleming @flemingstorm · 15m

When a polar bear is guarding the glacier ice front you need to get to!
#fieldworkproblems #FieldworkFail #FieldPhotoFriday #LifeOfAScientist
#Arctic #Svalbard #PolarBearWeek



Marian Pye @MarianPye · 5h

Replying to @ecologysarah @RoserCasasMulet and 18 others
Yep...and the time @hannah_c_burton accidentally locked the car keys inside
the car whilst miles away from anywhere with no phone signal!
#fieldworkfail



USFWS
Washington Fish
and Wildlife Office
@WashingtonEcologicalS
ervices

- Home
- About
- Reviews
- Videos
- Photos
- Posts
- Community
- Events

Create a Page

Like

Comment

Share

Write a comment...

USFWS Washington Fish and Wildlife Office
October 25 at 2:06 PM · 🌐

Don't you hate when your phone pings those cell towers in Canada and you get charged?
Imagine how these Russian researchers felt when the eagles they were studying racked up huge roaming data charges! 📶📶📶

BBC NEWS

BBC.COM
Migrating eagles run up huge data roaming charges
Russian scientists tracking eagles got huge SMS bills when some birds fle...

Like

Comment

Share

Write a comment...

73 1 Comment 18 Shares

Most Relevant

Write a comment...

<https://www.youtube.com/watch?v=xF33MEAj79s>



Search



Researcher Uses Freshwater Puddles To Study Climate Change

406 views • Feb 21, 2020

4 0 SHARE SAVE ...

“We need to be more open to being passionate about what we do and actively demonstrate that passion when we interact with people outside our field.”



Contents lists available at [SciVerse ScienceDirect](#)

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon



Science communication for biodiversity conservation

David Bickford ^{a,*}, Mary Rose C. Posa ^a, Lan Qie ^b, Ahimsa Campos-Arceiz ^c, Enoke P. Kudavidanage ^a

^a Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Singapore

^b Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Menglun, Mengla, Yunnan 666303, China

^c School of Geography, University of Nottingham Malaysia Campus, Jalan Broga, Semenyih, 43500 Selangor, Malaysia

“If professionals expand their communication to include also the emotional connotations of nature, they may build a shared emotional connection with the public that can be a powerful tool to overcome resistance and build shared visions on conservation issues.”



Biological Conservation
Volume 168, December 2013, Pages 184–191



Does expertise matter? An in-depth understanding of people's structure of thoughts on nature and its management implications

Arjen E. Buijs  , Birgit H.M. Elands

 [Show more](#)

<https://doi.org/10.1016/j.biocon.2013.08.020>

[Get rights and content](#)

“Messages framed with specific types of negative emotions are more likely than messages framed without emotion to convey impressions of the speaker as rational, strong, and caring, which in turn predict greater preference for emotional over non-emotional messages. “



frontiers
in Communication | Science and Environmental
Communication

SECTION ABOUT ARTICLES RESEARCH TOPICS FOR AUTHORS EDITORIAL BOARD ARTICLE ALERTS

< Articles

THIS ARTICLE IS PART OF THE RESEARCH TOPIC
Public Will, Activism and Climate Change [View all 9 Articles](#)

ORIGINAL RESEARCH ARTICLE
Front. Commun., 17 January 2019 | <https://doi.org/10.3389/fcomm.2018.00063>

Check for updates

“Be Worried, be VERY Worried:” Preferences for and Impacts of Negative Emotional Climate Change Communication

Brittany Bloodhart^{1*}, Janet K. Swim^{2†} and Elaine Diccio²

Remember our “rules”

- Science is a process – a pursuit of knowledge - practiced *by people*. Science is not what we know, but *how we know it*.
- Science is not the *only* way - or the best way - to pursue knowledge.

Some approaches to sharing science

- Make it local.
- Make it real.
- Make it positive.
- Make it trendy.
- Make it relevant.
- Make it human.
- Make it personal.

It's Time to Give Up on Facts

Or at least to temporarily lay them down in favor of a more useful weapon: emotions.

By Jess Zimmerman



20 SECTIONS



THE NEW YORKER

BOOKS FEBRUARY 27, 2017 ISSUE

WHY FACTS DON'T CHANGE OUR MINDS

New discoveries about the human mind show the limitations of reason.



By Elizabeth Kolbert



A personal take on science and society

World view

You can't fight feelings with facts: start with a chat

I donned a sandwich board inviting questions on evolution and learnt three crucial lessons about public engagement on divisive issues, writes Maggie Ryan Sandford.

I went to the Minnesota State Fair last year wearing a sandwich board. It said, "Ask me anything about evolution." Proponents of evolution assumed I was a religious zealot. Creationists assumed I was there to mock their beliefs. The biggest challenge in fighting misinformation? Just getting a conversation started.

This public-engagement stunt taught me a crucial lesson: the key to effective science communication isn't the science. It's communication.

Attendees had come to show off prize livestock, eat corn dogs and ride the Ferris wheel, not get angry about someone who disagrees with them about the origin of life on Earth. Most folks wouldn't stop to talk unless I passed what I came to recognize as 'the first test'. Some would call out.

Lay people are more likely to trust and engage with science when they learn that researchers are human beings, fallible and conflicted.

Lesson 2: Listen. The most challenging group of the day consisted of two men and a woman in their late twenties. The men were just looking for a fight. Telling me why I was wrong was, I supposed, a way of asking me about evolution. I asked them to elaborate, to tell me why it was that they found evolution hard to swallow. This led to their female companion insisting: "She listened to you. Now you listen to her." In the end, one man explained my points to the other. "She's saying evolution is mutations in our DNA," he said, forcing his companion to let him finish. "I'm just saying, I get her side."

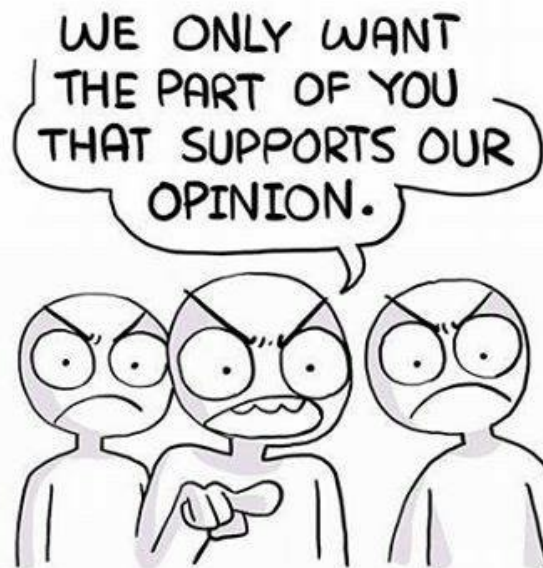
Lesson 3: Learn what people really think. Almost everyone — secular and religious — had misconceptions about evolution. Advocates of evolution often hadn't learnt that evolution can now be tracked in genomes, not just fossils, and that humans are related to all living things, and that we didn't come from apes because we are apes (keep in mind, 'ape' is a word that humans made up).

But the misconceptions of religiously inclined folks



By Maggie Ryan Sandford



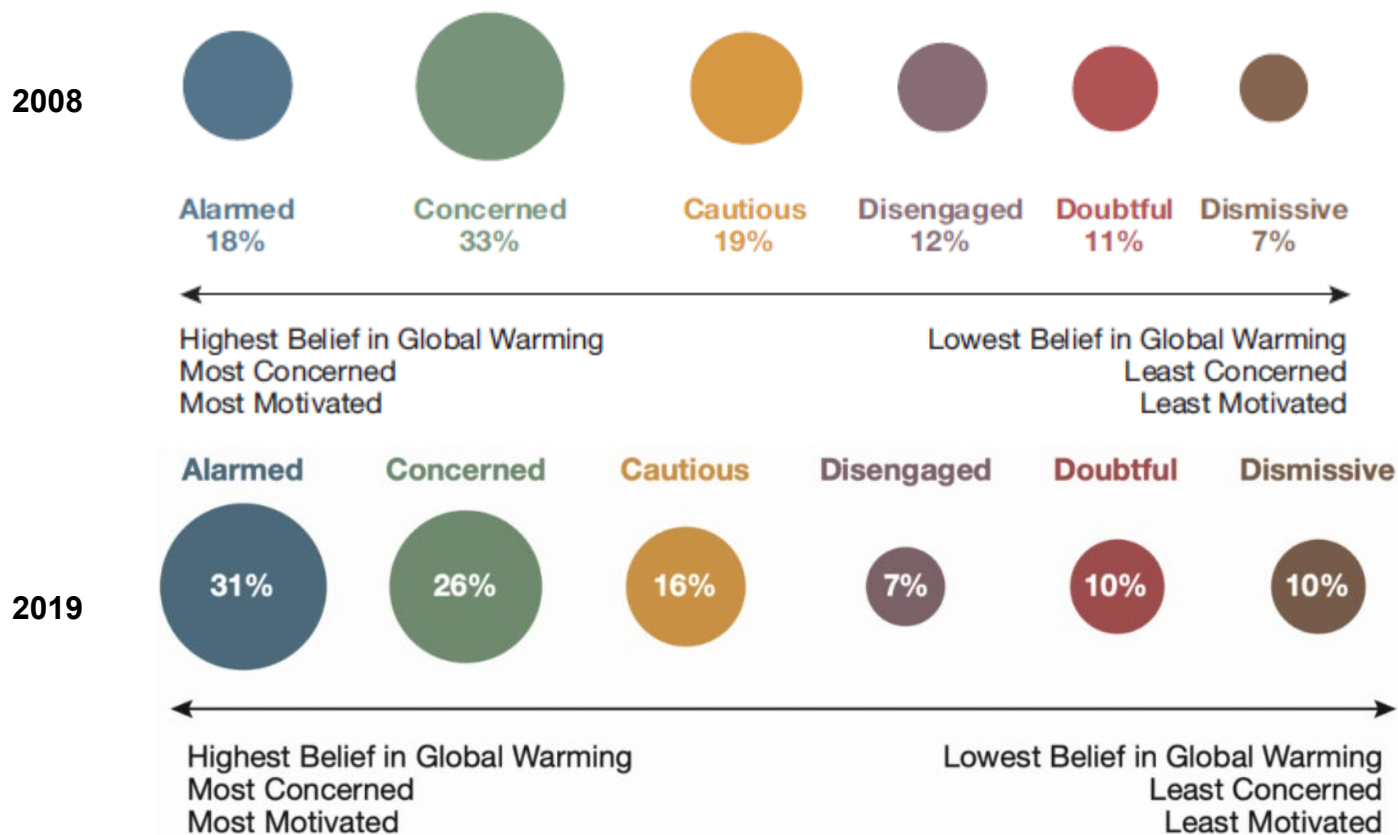


BUT THEY COULD AND DID.



Figure 1: Proportion of the U.S. adult population in the Six Americas

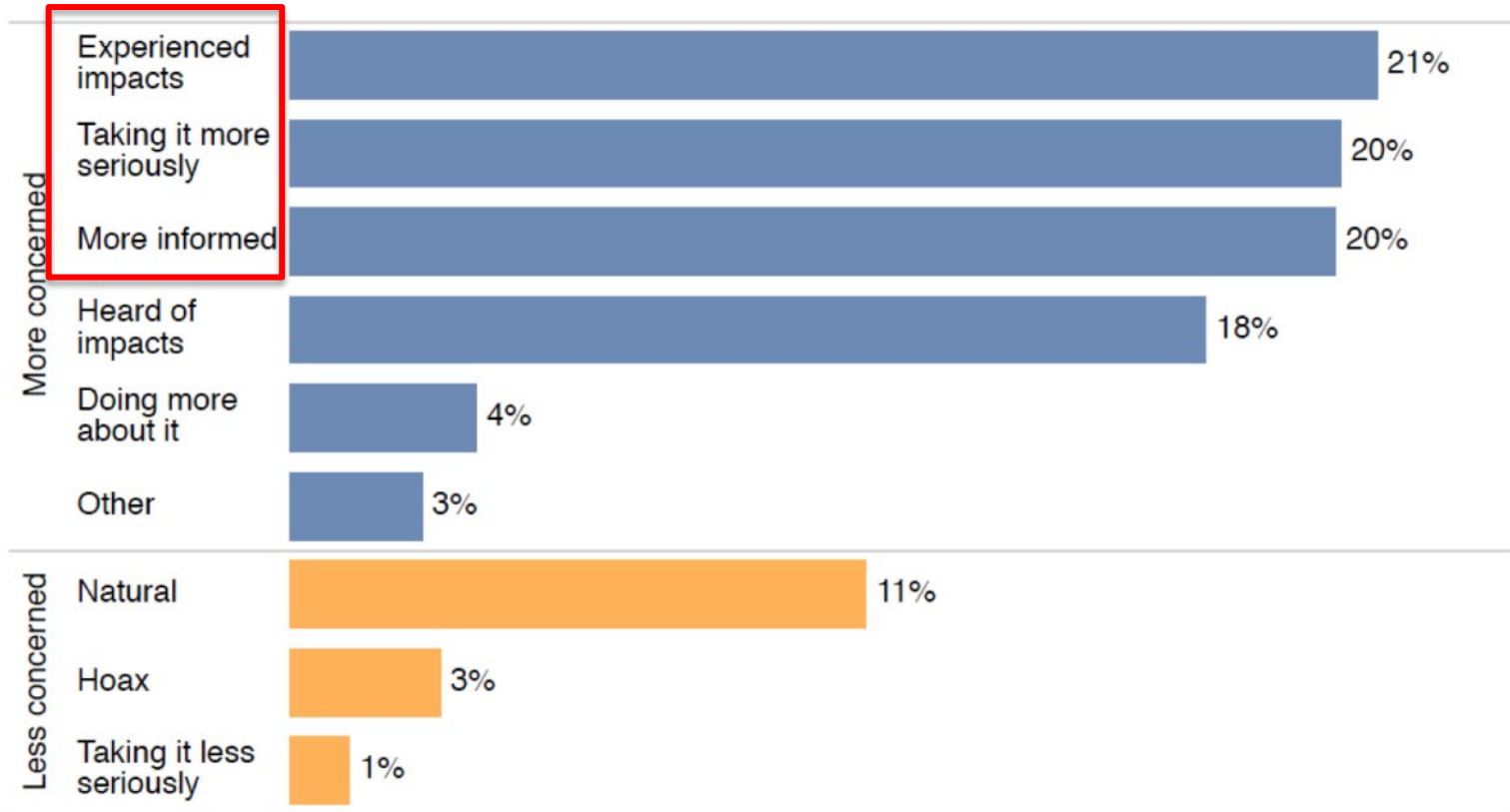
Proportion represented by area



November 2019. Base: Americans 18+ (N = 1,303).

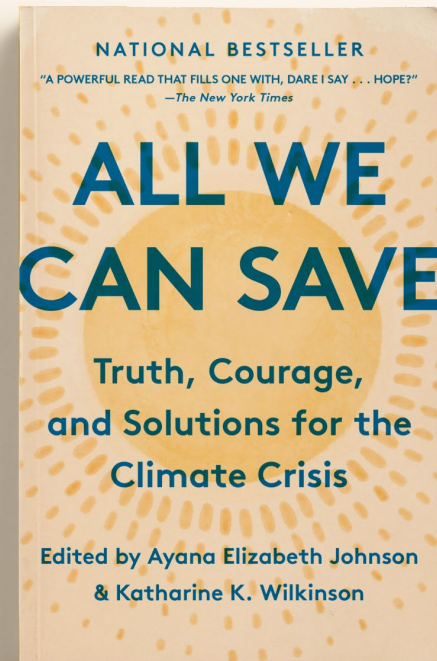


Why have you changed your mind about global warming?
(*n*=184)



Deeg et al. 2019

“Most people who are interested in climate change just don’t yet have the tools to talk about it confidently. The choir is there. They want to sing. But they don’t know the words.” - Emily Atkin



Breakout Discussion

What frame or approach resonated with you?

What do you have questions about?

Would any of the presented approaches be a good fit for your audience + purpose?

Planning

Do you have a plan?

Purpose – *Why are you communicating? What change do you seek?*

Audience(s) – *Remember there is no such thing as “the general public.”*

Common ground – *What do you have in common with your audience?*

Challenges – *What might prevent communication success?*

Frame or approach – *What approach(es) can address the challenge(s)?*

When will you communicate?

Where will you communicate?

How will you communicate?

Do you have a plan?

Objective – *Why are you communicating? Why now? What is the problem?*

Audience(s)

Outcome - *What do you want to happen/change as a result of your communication? How might you evaluate success? What are potential solutions?*

Background

Key messages

Words to use/not use

Messages for different audiences

Christie Anastasia, Acadia National Park

Do you know your purpose?

Outcomes occur when findings and products of research are used by stakeholders or integrated with management decisions.

Outcome: ban on plastic bags

Outcome: change in vegetation management and visitor outreach

Outcome: blog post on research cited by testifier, news article, etc.

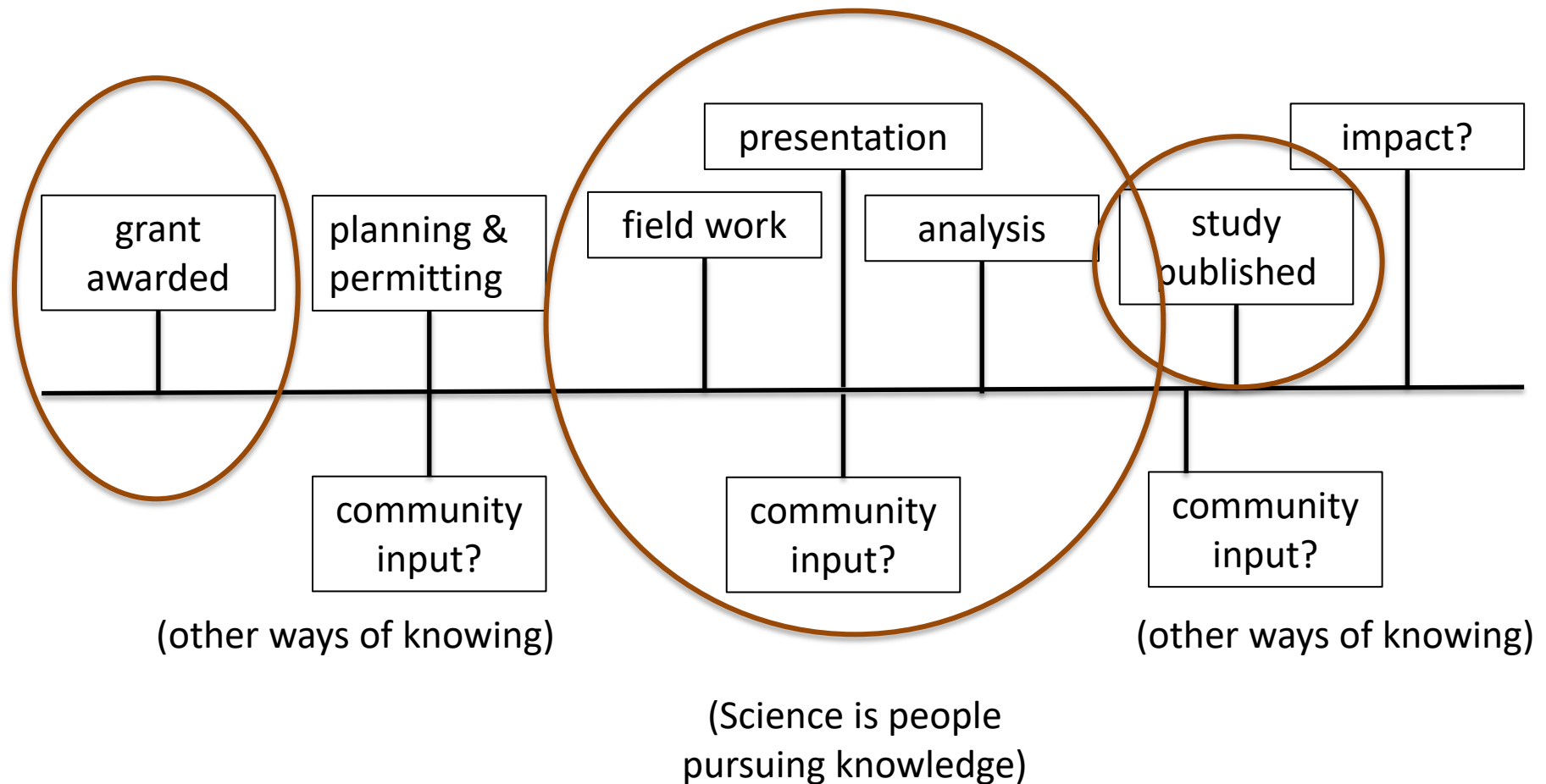
Impacts are when those outcomes have lasting effects, such as behavior change, policy shifts, adoption of new practices, long-term conservation or restoration of ecosystem services, or economic prosperity.

Impact: fewer plastic bags in local stream/harbor

Impact: reduced incidence of tick-borne illness

Impact: blog post source viewed as trusted messenger

When will you communicate?





≡ NEWS SPORTS OPINION LIFE OBITUARIES JOBS CLASSIFIEDS TV PAU HANA

The Maui News

November 08, 2019 | Today's Paper | Submit News | Subscribe



National Park Service
U.S. Department of the Interior

Haleakalā National Park

Post Office Box 369
Makala, HI 96768

808 572-4400 phone
808 572-1304 fax
www.nps.gov/hale

Haleakalā National Park News Release

Release date: Immediate
Contact(s): Polly Angelakis
Phone number: 808-572-4450
Date: 8/24/15

Haleakalā NP Outlines Pine Control Project

Haleakalā National Park held a public meeting on Thursday, August 20 to outline a pine control project scheduled for September-October 2015. The project will target over 3000 invasive pine trees in the Haleakalā crater.

Halt aerial spraying of dangerous chemical

LETTERS TO THE
EDITOR

SEP 6, 2015

f SHARE t TWEET

Your Aug. 29 issue contains the worrisome news that there will be a mass aerial spraying of invasive pine trees in the cliffs of Haleakala National Park with an herbicide containing glyphosate. Glyphosate, the key ingredient in Monsanto's Roundup, has been shown to cause kidney and liver damage and cancer. Glyphosate is banned in a number of countries, including the Netherlands, Russia and Mexico.

How will you communicate?

your own website

institutional website (e.g., NPS)

video

Twitter

podcast

Instagram

virtual presentation

education program

citizen science program

in-person presentation

event table

museum exhibit or display

poster

YouTube

Facebook

arts collaboration

news story

magazine story

community meeting

field trip

book

pamphlet

brochure

radio program

op-ed

game

story map

live Q & A

essay

poem

performance

live storytelling event

animated cartoon

infographic

television program

documentary

traveling display

diary

photography

testimony

What resources do you need?

- have **evidence** to support your media (eg, if you are going to do a video, provide evidence to show that a video is the appropriate format for your audience)
- work with - but don't assume – partners. show evidence that you have the **capacity** to complete your plan.
- budget appropriately!

product	cost	hours
poster	\$100 - \$200	8-60
fact sheet	\$250-\$500	8-160
kiosk display	\$3,000 - \$5,000	80-200+
report	\$500 - \$20,000	40 hours -18 months
article	\$0 - \$2,000	8-40+
website	\$0 - \$20,000	160-18 months
public event	\$50 - \$1,000	10-20 hours
video	\$3,000 - \$10,000+	15+
artwork	\$250 - \$3,000+	

Are you the right messenger?



How will you know if you've been successful?

What's next?

Purpose – *Why are you communicating? What change do you seek?*

Audience(s) – *Remember there is no such thing as “the general public.”*

Common ground – *What do you have in common with your audience?*

Challenges – *What might prevent communication success?*

Approach – *What approach(es) can address the challenge(s)?*

When will you communicate?

Where will you communicate?

How will you communicate?

What additional information do you need about your audience?

What future practice, training, or resources do you need?

How will you measure the effectiveness of the product or program?