2022 MMM EDUCATORS PACKET

WELCOME TO the 10th Annual MMM!! We are so happy you've joined us. This INTRODUCTION to the 10th Annual March Mammal Madness SLIDE SHOW will get you and your students quickly up to speed. But we've prepared some additional pro-tips and oh so many links. If you are a long-time player, get ready for how we've turned the dial to 11 for the 10th Tournament. If this is your first foray into the madness, think of MMM like a river- you can jump in, go wading, or dip your toes- whichever you choose will be great!

The tournament features 65ish species (lichen, lichen, lichen you are making things complicated)… but there is only one champion. This means that **64 species AREN'T going to win**. Prepare your students for the possibility of heartbreak. Sometimes, rarely, a much less-likely combatant triumphs as we have built in some randomization into the tournament. This is why we write battles with unexpected but evidence-grounded plot twists, and other narrative techniques such as 3rd party interventions. This is part of the suspense, surprise, and collective experience of March Mammal Madness. **For this reason we also recommend teachers do not grade on accuracy of bracket predictions** and instead have assignments based on research, justification, and arguing from evidence to advocate for their predicted champion. We have a LOT of lesson plans for you pick from!

Feeling a little overwhelmed? Katie Hinde, Tournament Founder and Lead Organizer and Anali Perry, Doyenne of the ASU LibGuide are doing a free Community COnversation on Feb 24th at 3-4PM AZ time to talk about how to navigate experiencing the tournament and making the most of your experience. REGISTER for the event here.

And want to help you students learn more about the science & scientists behind March Mammal Madness? On Friday, February 25th our friends over at Explore by the Seat of your Pants are hosting a March Mammal Madness FESTIVAL- each hour we'll have a planned panel of scientists talking awesome topics- and answering student questions! Register for classroom access, or follow live on YouTube, or catch the recordings at your leisure later on.

RESEARCHING THE COMBATANTS

The ASU March Mammal Madness LibGuide is a great place for updates, resources, & guidance for student research of tournament combatants. The ASU Library has done an AMAZING job putting together publicly available resources for scientifically accurate information. This spreadsheet organizes English common names, Latin binomial, and some additional specific information that may help folks make their bracket predictions.

Oxford University Press, home of the Journal of Mammalogy and the journal Mammalian Species has again GENEROUSLY curated a special issue of articles of MMM combatants that players can freely access for their combatant research. The Mammalian Species articles are especially useful for students as it has detailed descriptions of their physical & behavioral traits, diet, ecosystem, and other aspects of natural history. This is a highly recommended resource for the particularly engaged young scholars.

And here's a SWEET March Mammal Madness themed playlist to play while students are doing their research. Are there hidden clues in the playlist? You know it.

FOLLOWING THE ACTION

Folks can direct their students to follow @2022MMMletsgo- this is the "educator" safe account that only has official tournament tweets and is classroom appropriate. All bets are off on the tournament hashtag #2022MMM in which the fandom can get very exuberant.

Just like 2020 & 2021, each evening of the tournament we will upload the a pdf of the twitter play-by-play and a "sports-style summary" of the evidence-based battles that's ~1 paragraph explanation for each battle at the ASU LibGuide. MC Marmot & the Rodent Roundtable will be back with school-safe videos summarizing the battle outcomes that drop the morning after the battles- but watch out for their strong rodent combatant favoritism. These will post directly to YouTube and you should follow their channel.

Last year we published an open access article about March Mammal Madness in eLife. We discuss the history, science, team, community, and reach of the tournament. It's a long article, but it is part of our ongoing love letter to nature, science, and all who appreciate nature and science. TL-DR conclusion:

> "March Mammal Madness upends the stereotype of science as dry, prescriptive disciplines and shows that science and scientists can be, and should be, creative and fun. Scientists situate ourselves in the domain of data collection framed by hypotheses and predictions as we speculate about the world(s) around us. But fundamentally these are just grown-up words for ideas hewn from imagination and the creative combination of what is known to journey into the unknown. March Mammal Madness is collective, "performance science" – the stories of animals, told creatively with awe for the natural world. We celebrate species and the ecosystems they inhabit, the scientists who conduct studies, and the funders who make the research possible. For a few weeks each year, a vibrant and diverse March Mammal Madness community comes together to collectively marvel at our living planet's beauty, harshness, and fragility. We acknowledge that humans are at the root of many of the problems we highlight, but also recognize that the communities we reach are essential branches of any solutions. By fostering a greater love and respect for biodiversity, we hope that engaged students and curious publics will be inspired to transform their affection into action and reverence into protection."

THE BRACKET

There are SIX printable versions of the brackets:

a. English common name bracket (single page)
b. English common name bracket (JUMBO- designed to print as 5 pages for younger kids who need more room to write)
c. Spanish common name bracket (single page)
d. Spanish common name bracket (JUMBO- designed to print as 5 pages for younger kids who need more room to write)
e. Latin Binomial bracket
f. A screen-reader compatible bracket

THE CURRICULAR MATERIALS

Lesson Plans & Activity Sheets in this Packet in PDF:

a. Life Sciences Research the Contenders Lesson Plan (English)
    i. Link to download the editable version
b. Life Sciences Tournament Events Lesson Plan (English)
    i. Link to download the editable version
c. Life Sciences Tournament Outcomes Lesson Worksheets (English)
    i. Link to download the editable version
d. Visual Arts Lesson Plan & Cube Template (English)
    i. Link to download the editable version
e. Language Arts Haiku Lesson Plan (English)
    i. Link to download the editable version
f. Language Arts “The Championship Battle That Should Have Been” Lesson Plan
    i. Link to download the editable version
g. 4th Grade National Parks Every Kid Outdoors Language Arts Lesson Plan
    i. Link to download the editable version
h. Ecosystem: Interactions, Dynamics, & Impacts Lesson Plan has been delayed and will be released on Feb 25th, 2022 in the download to edit folder.

Please note, the Spanish Versions of Lesson Plans will be posted in a separate packet when translations are finished this week. We apologize for the delay.

MORE MATERIALS!

Combatant Info Slide Show (Intended primarily for K-5 students). Includes information about the species structural advantages, biome, diet, position in food chain, image, and information about size relative to humans (kids & adults).

March Mammal Madness Team Info “booklet” that has pictures and affiliations of all the team members that have made MMM possible 2013-2022.

2022 March Mammal Madness Tournament Trailer by Jennifer Gabrys (This is AMAZING)

Collector Trading Cards & Blank Research Template Trading Cards by Ian Hecht (OH WOW!)

ONLINE, SELF-SCORING BRACKET & HOW TO MANAGE IT FOR TEACHERS by Jeff Brunstrum: Self Scoring Tournament Bracket - This will allow participants to have a digital MMM bracket of their picks that will automatically update and score their selections as the tournament goes on. If you are looking to run a MMM competition (or use it in your class) this will also give a convenient way to bracket submissions and the competition manager / teacher can use the digital manager sheet to automatically score up to 40 entries and keep updated standings throughout the tournament. Here is the link to the Contest Manager - This template allows a Bracket Contest Manager to run a Contest using Google Sheets. The contest manager can use this sheet to automatically score up to 40 entries and keep updated standings throughout the tournament. (THANK YOU GOOD SIR!)

Phylogeny of all MMM Combatant Taxa 2013-2022 Printable Poster by Albert Chen. (JUST WOW!)

MMM Certificates for Research, Engagement, and Top Scores Template Recognize the students who get a little extra about MMM.

Editable 2022 MMM Calendar Add due dates, class events and more, however is useful for you.

Last Year Mr. JT MIller created a video for how to fill out a bracket for folks who’ve never filled out a bracket before, it’s last year’s species, but the concept is identical. Word on the street is that he and a colleague have developed an Animal Themed Wordle game to debut at the beginning of March… keep on eye on the LibGuide for links to that and OTHER MMM games! (SO MUCH EXCITEMENT!)

WHEW… I think that is most everything! ANYWAY:

We couldn’t do this without the amazing educators who bring March Mammal Madness to their learners each year. In 2022 there are already 5500+ educators requesting to use March Mammal Madness with their 500,000+ learners! Here’s to an amazing month of celebrating the Tree of Life and the Natural World. Thank you for all that you do, now more than ever, and thank you for sharing MMM with your learners. On behalf of everyone who makes MMM happen, we hope your students have a great time with this learning activity!

Happy Bracketing!!! -The ENTIRE March Mammal Madness Team!

Presentation by Katie Hinde, in part adapted from earlier versions by Maddie Sinnott, Kate Faust, & Robin Kaufman

INTRODUCTION: What is MMM?

• March Mammal Madness is an annual tournament of *simulated* combat encounters among animals answering the timeless question “WHO WOULD WIN?”

• Scientists estimate which is the winner in an encounter from a probabilistic assessment of the two species' attributes within the “battle” environment.

-weaponry -armor -fight style
-temperament -motivation -special skills

INTRODUCTION: What is MMM?

- The official outcome is determined by a random number generator, so upsets are unlikely, but possible.

- Scientist-narrators use information from the “scholarly literature,” publications of scientific research, to substantiate outcomes, even improbable outcomes.

- Scientists then write the encounter as though live announcing a play-by-play happening in real time that is “performed” on Twitter, like the exciting days of radio.

INTRODUCTION: What is a Mammal?

- **Think** - Write down the answer to the question above: What is a Mammal? (provide definitions, characteristics, ONE example.)
- **Pair** - With the person next to you, share your definition/characteristics of a mammal and update your own. You should have TWO examples at the end of your discussion
- **Share** - As a table, share your combined definitions and update them again. Nominate ONE person to share the table's definition/characteristics of a mammal to the class. You should have THREE/FOUR examples at the end of your discussion.
- **Class Discussion** - Update your mammal definition as a class. Discuss various characteristics and definitions of a mammal.

INTRODUCTION: What is a Mammal?

Class Mammalia

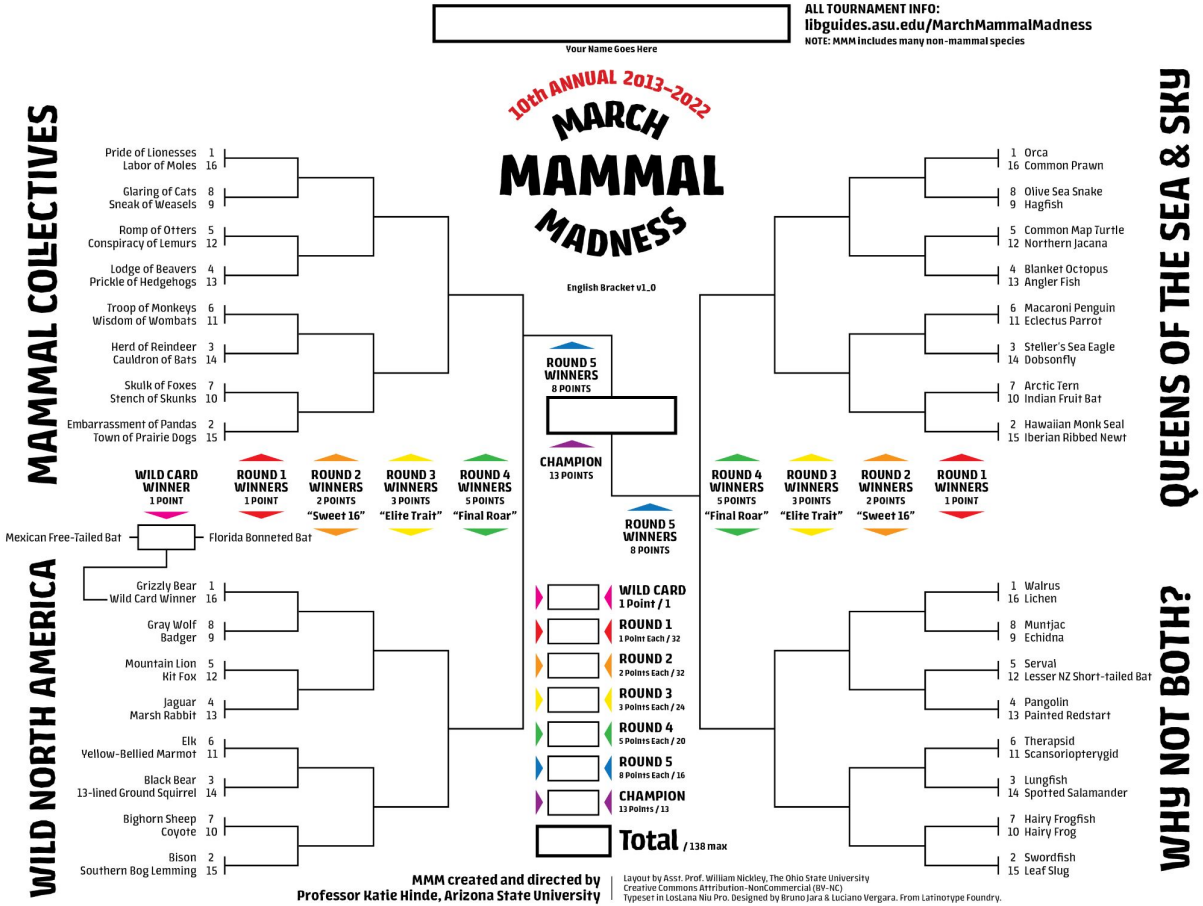
Three subcategories:

- **Monotremes** (i.e. platypus)
- **Marsupials** (i.e. kangaroo)
- **Placental Mammals** (i.e. elephant)

Mammals are:

- Warm Blooded (regulate internal body heat)
- Hair/fur for insulation, protections, camouflage & waterproofing
- Four (4) chambered heart (most complex)
- Produces milk from mammary glands
- Single jaw bone
- Specialized teeth (i.e. molars, canines, etc.)

INTRODUCTION: Pick Your Champion



INTRODUCTION: Four Divisions

Mammal Collectives

Collective nouns are a quirk of English, some dating back 500 years:

-Pride of Lions
-Skulk of Foxes
-Labor of Moles

*can be applied to animals that aren't actually social, so may not cooperate in battle encounters.

WILD North America

Celebrate protecting & stewarding North America's ecosystems, featuring a combatant from a specific population in National Parks, Conservation Areas, & Nat'l Forests.

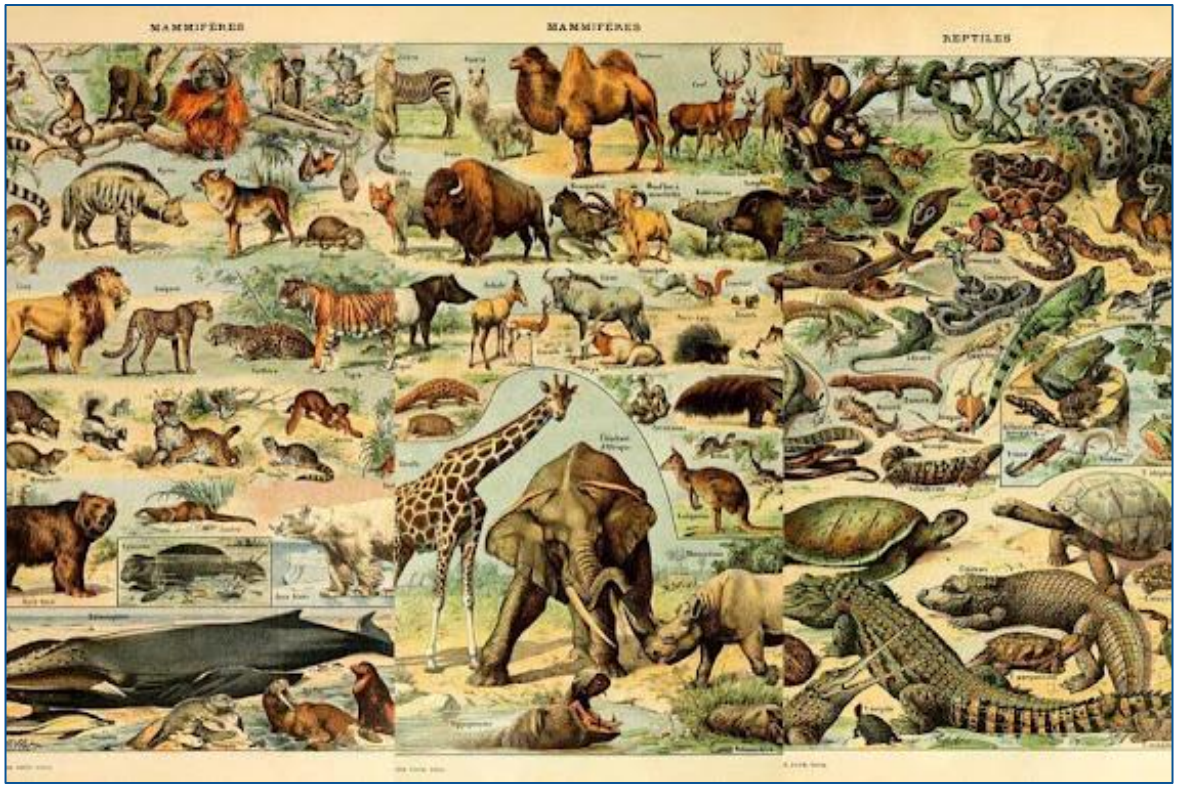
Queens of the Sea & Sky

Selection has favored many species where the female is bigger, badder, faster, or more knowledgeable. Learn about some amazing ladies from across the Animal Kingdom!

Why Not Both?

A wild selection of wonderful taxa that have weirdo combinations of adaptations! You may say "Tusks or Antlers? The Muntjac says "Why not both?"

INTRODUCTION: 65 Combatants



Over half of the combatants are mammals, but many other organisms are included.

INTRODUCTION: Pick Your Champion

Sometimes MMM "combatants" showcase the diversity of the Tree of Life but are not at all prepared to "battle."

- Pitcher Plant & Woolly Bat
  aka #TeamBatToilet in 2018
- Dandelion in 2019
- Lichen in 2022

INTRODUCTION: Learning Outcomes

By researching the species on the bracket and following the information shared by scientists in the play-by-play battle stories, players can learn about:

- species diversity & the Tree of Life
- inter-species interactions
- physical & behavioral traits and adaptations
- environments & ecosystems
- human impacts & environmental conservation

2022MMM

INTRODUCTION: Story Arcs

Although the tournament outcomes are probabalistic, battles are written as narratives and story arcs build across the tournament. “Events” in one round can carry into subsequent rounds in the MMM universe.

- Injuries: lacerations, wrenched joints, etc.
- Digestion, gut passage time, & hunger
- Zoonotic disease transmission
- Spring in Northern hemisphere, Autumn in Southern
- Seasonality matters, animals have their seasonally relevant priorities and conditions (moose are regrowing antlers, male platypus don’t have venom in their spurs)

The continued advance of Gopher Tortoise in March 2020 allowed MMM to message the tactical advantage of “SHELL-tering in place” for safety.

2022MMM

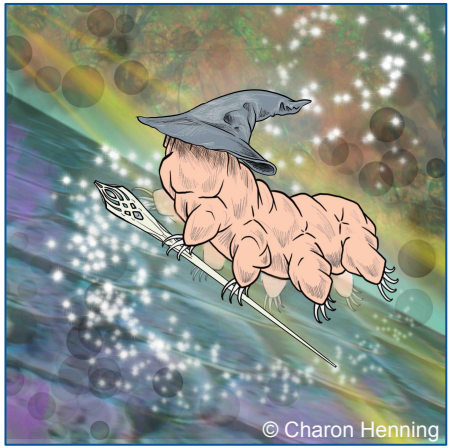
INTRODUCTION: Habitat Matters

• In the 1st Round, the 2nd Round, & the 3rd Round, the better-seeded species gets **HOME HABITAT ADVANTAGE!** (lower number = better seed/rank). The environment can have a big impact on the “battle.”

• In the Elite Trait, the Final Roar, & the Championship, the battle location is randomly selected from **4 habitats**: in 2022 these are Montane Forest, Kelp Forest, Savanna, & Sea Ice!

INTRODUCTION: Memes, Connections, & Parodies

Panda's poor ability to digest cellulose & unwittingly advance in 2017 lead to jokes about being both #WorstHerbivore & #WorstBear.



After sequentially hitching a ride from combatant to combatant across rounds, TardiGrandalf #AltAdvanced to an #AltChampionship in 2018.

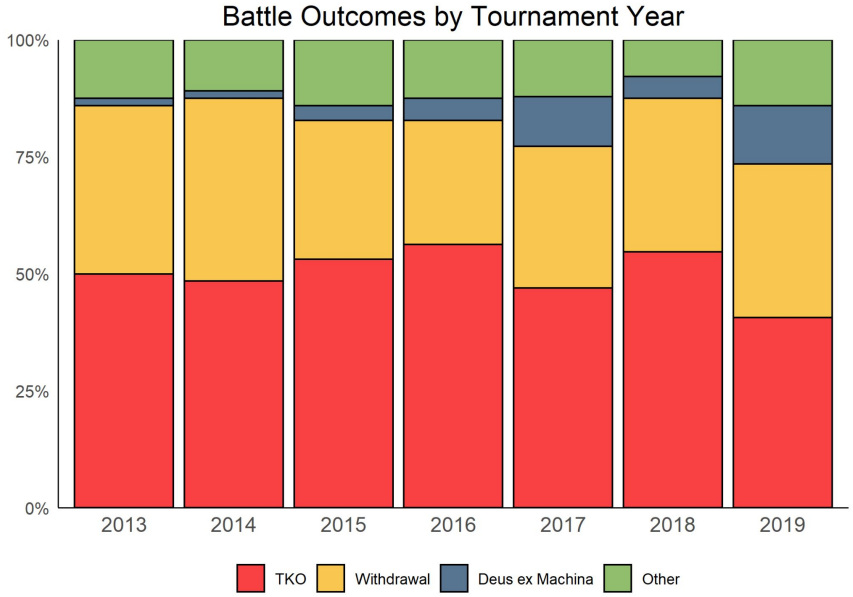
The Tag Team Division, for mutualistic relationships allowed crossover promotion of a school anti-bullying campaign in 2019.

"She's ferocious, & she knows just what it takes
to make a sloth rush.
She's got Howler Monkey's ripped
off thighs.
She's got Harpy Eagle eyes."

INTRODUCTION: Battle Outcomes

FACT: most encounters among animals in the wild are not “Red, in tooth & claw.” So MMM “battles” descriptions are not always to the death, they can be to the back down, to the run away, and outside interference.

-sometimes animals interact at food & water sources without aggression
-predators are not always on the hunt
-carnivores may not want to risk an injury by getting into a fight with another carnivore



(Hinde et al. 2021 eLife)

INTRODUCTION: Assignments

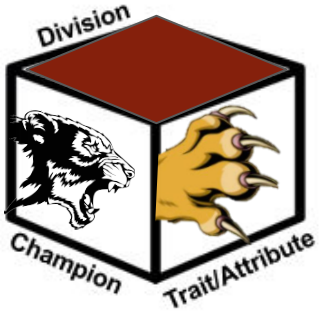
Combatant Research
Distribution of Combatants & Slide Creation

Encounter Predictions*
Distribution of 1st Round Match-Ups & Slide Creation

Hype Poster
Creation of promotional poster for your chosen “champion”.

Bracket Creation
Fill in your bracket!

Art Cube & Haiku
Craft a Haiku & Art Cube for assigned combatant



the savanna stills
lioness pride prowls at dusk
many eyes follow

Battle Details & Outcomes
Worksheets for following each round of the tournament

INTRODUCTION: New Lesson Plans for 2022

In honor of the WILD NORTH AMERICA DIVISION- we have Public Lands Lesson Plans!

4th Grade Language Arts & Social Studies

Kids in the forth grade can sign up ONLINE for a FREE Federal Parks Pass, as part of the **EVERY KID OUTDOORS** program. Mt. Rainier Park Ranger Tara Chestnut, PhD designed a lesson plan tailored to 4th grade language arts learning core themes (with a dash of animal senses NGSS thrown in!) that get thinking about their own state public lands AND future nature adventuresx

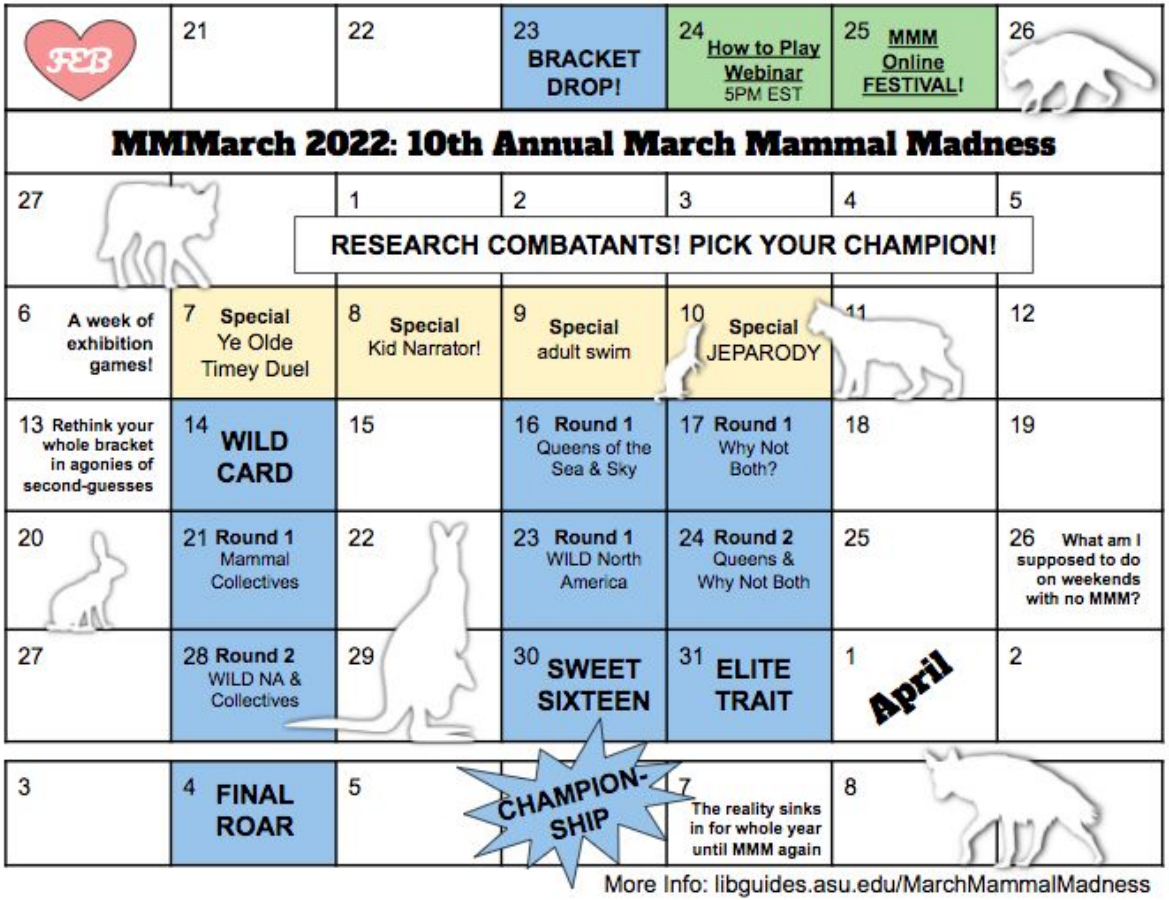
ECOSYSTEMS

Using the US **Public Lands Species List Searchable Database** student can learn about ecosystem dynamics, interactions, and impacts.

Middle Schoolers: Identify other primary, secondary, and tertiary consumers in a combatant's Park ecosystem.

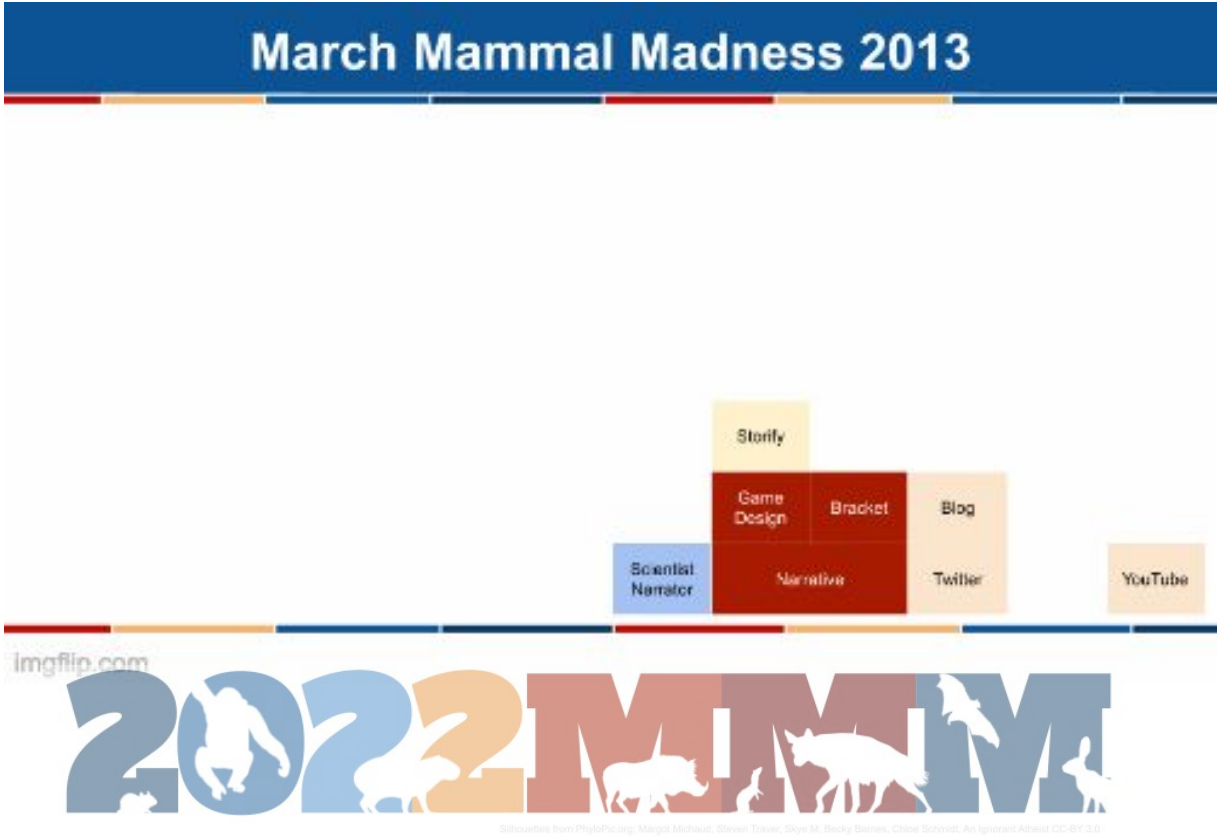
High Schoolers: Many 2022 combatants are geographically widespread: compare a combatant's animal communities between TWO National Parks

INTRODUCTION: Calendar

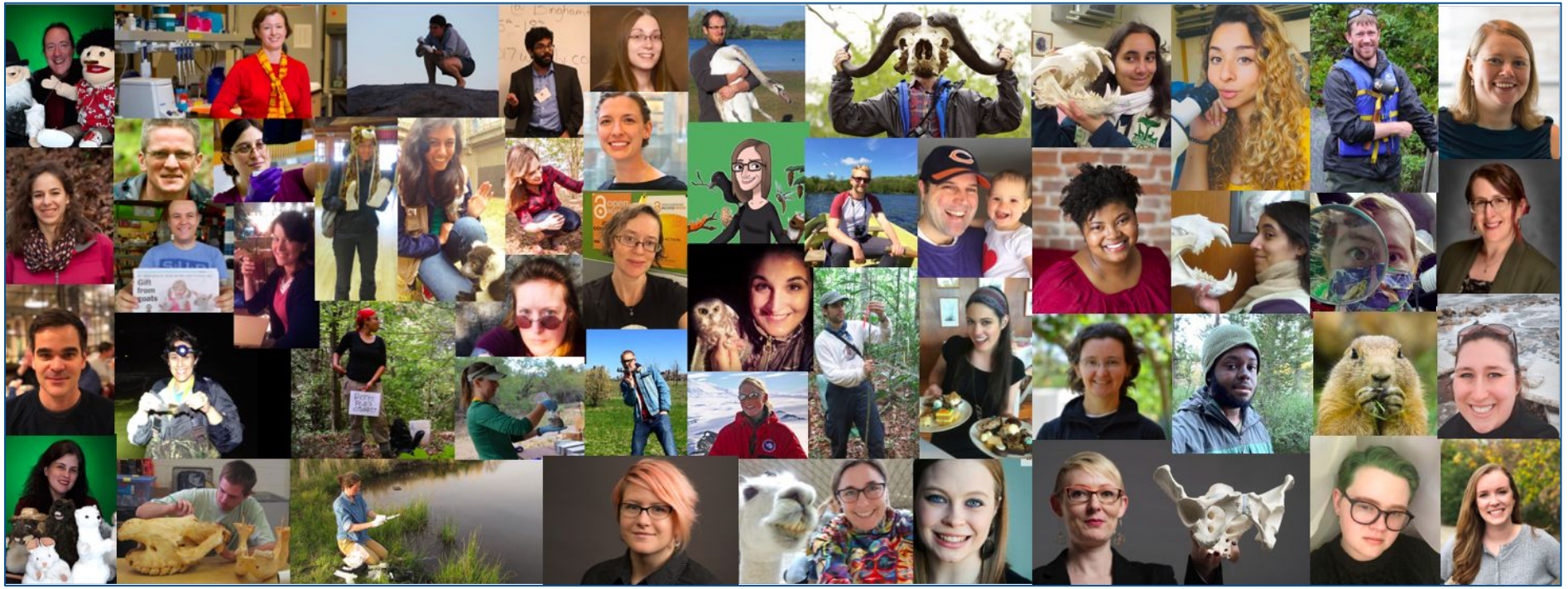


More Info: libguides.asu.edu/MarchMammalMadness

INTRODUCTION: Leveling Up since 2013



INTRODUCTION: The MMM Team



2022MMM

INTRODUCTION: Following the Tournament

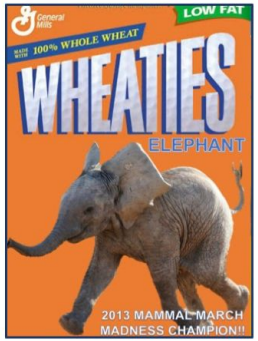
LIVE Play-by-Play on Twitter
Follow March Mammal Madness
@2022MMMletsgo

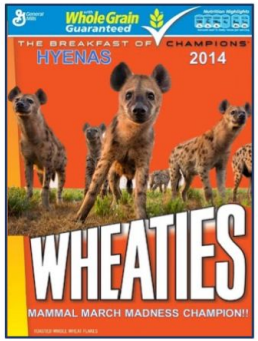
Sports Summaries posted on the MMM Library Guide

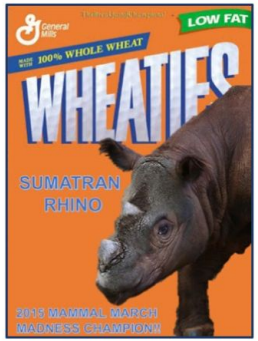
MC Marmot & the Rodent Roundtable Battle Recaps on YouTube

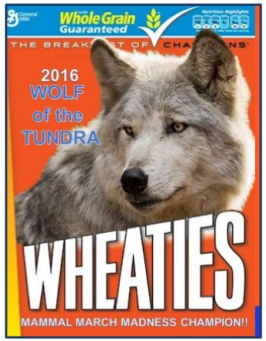
2022MMM

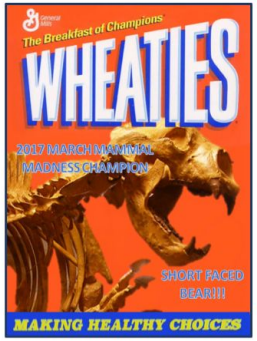
INTRODUCTION: Annual Since 2013

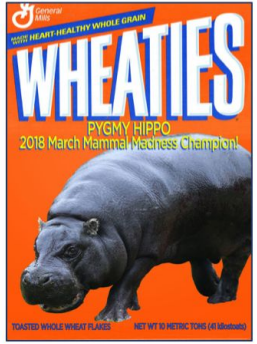


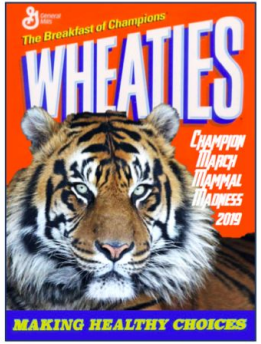


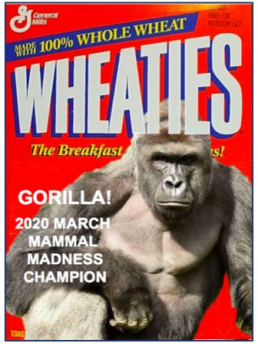


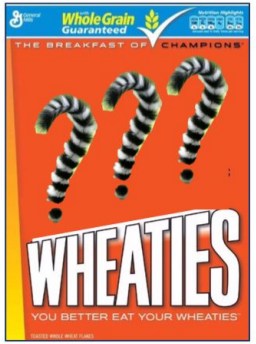








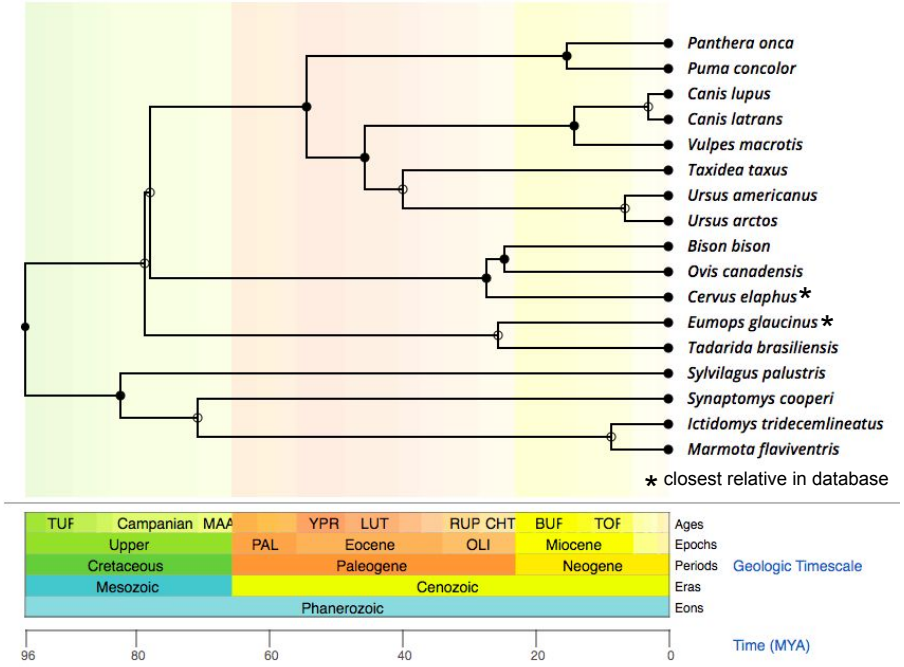




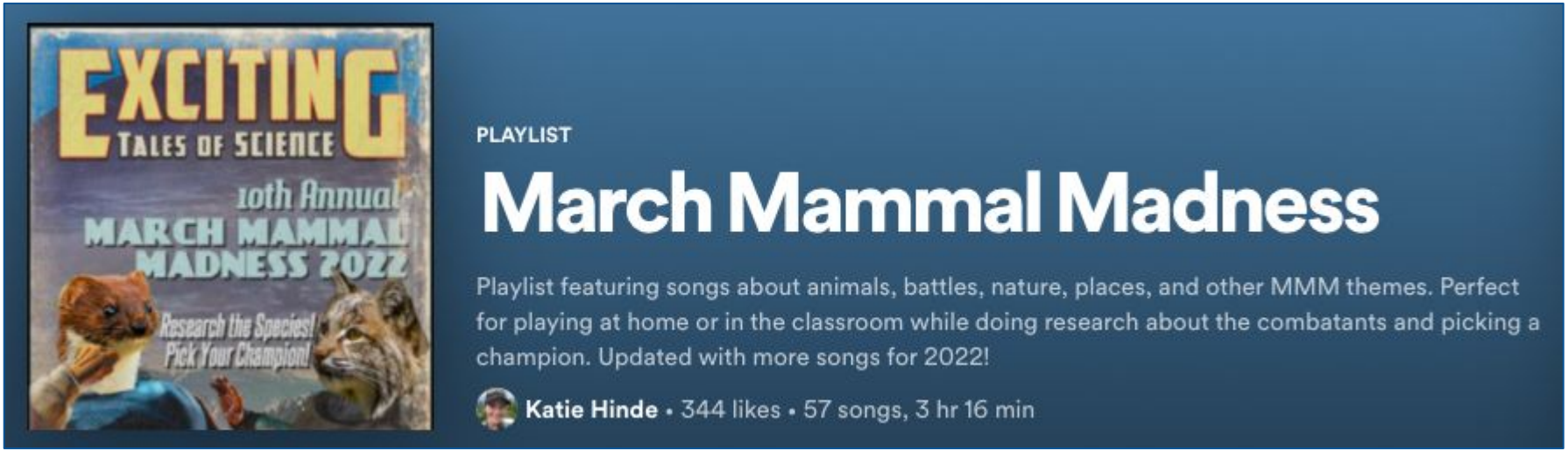
INTRODUCTION: Resources

- MMM Library Guide for Animal Information
- Special Collection of Scientific Articles from Oxford University Press
- Searchable database of species in National Parks & other US Public Lands
- PhyloPic.og Animal Silhouettes & Wikimedia Commons for Animal Photos
- Divergence timelines, phylogenies & more! at TimeTree.org

TimeTree.org Phylogeny of WILD North America Division 2022



INTRODUCTION: MMMusic



SPOTIFY PLAYLIST

March Mammal MadnessTeam Members 2013-2022

Art Team

Charon Henning, BIS
March Mammal Madness
Art Director

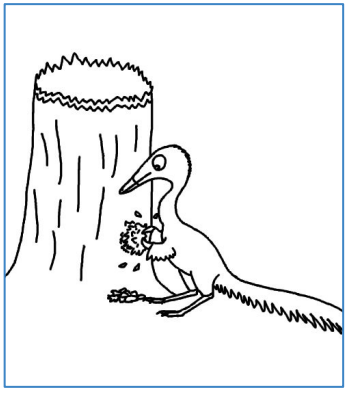
Mary Cassilas, BS
Science Teacher
& Illustrator
Combatant Art

Olivia Pellicer, BFA
Character Animator
Combatant Art

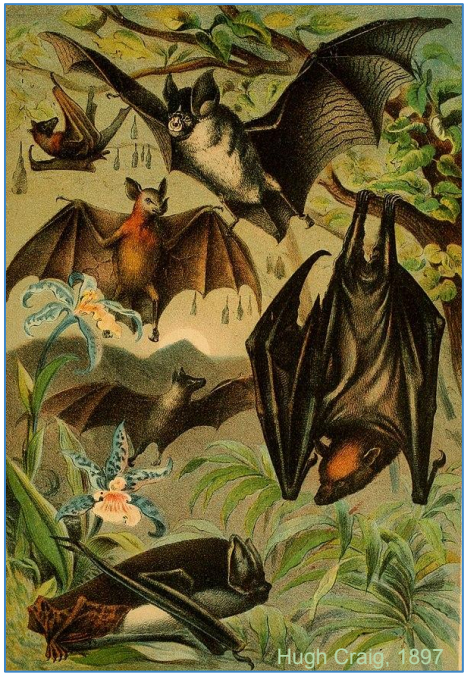
Valeria Pellicer, BFA
Science Illustrator
Combatant Art

Cyn Rudzis
Combatant Art

Will Nickley, MFA
Department of Design
The Ohio State University
Bracket Design



Albert Chen, PhC
Milner Center of Evolution
University of Bath
Combatant Phylogeny



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BE Creative LLC
MC Marmot

Brain Easterling
Producer/Editor/Puppeteer
BE Creative LLC
MC Marmot

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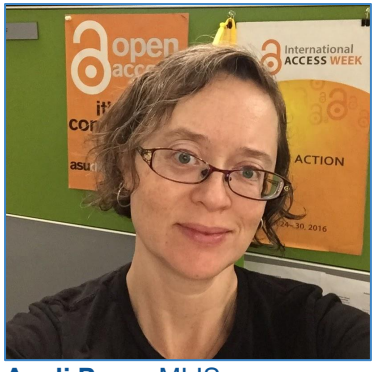
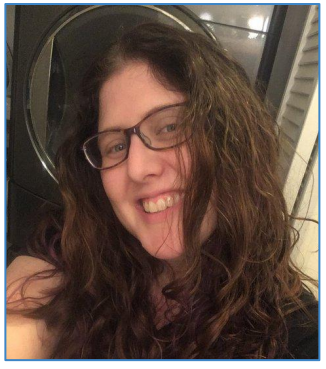


Anali Perry, MLIS
Scholarly Comm Librarian
Arizona State University
LibGuide Empress

Katie Hinde PhD
BioAnthropologist
Arizona State University
Curricular Development



Jenna Kissel
Education Coordinator
FB Page Management
Combatant Info Slides

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Wildlife Biologist
Mt. Rainier National Park
National Park Service

Alejandra Núñez de la Mora, PhD
Human Biologist
Instituto de Investi-gaciones Psicológicas
Universidad Veracruzana
Spanish Translation

March Mammal Madness Tournament 2013-2022

Curriculum & Library Sciences Team

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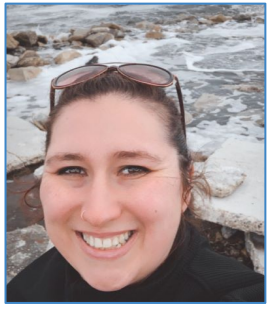
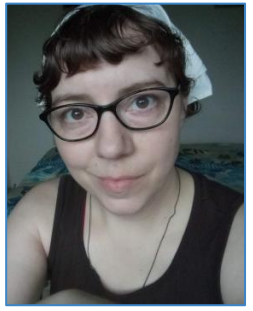
College Osteopathic Medicine
Sam Houston State University
Sports Summaries



Jessica Martin, BA
Arizona State U
Sports Summaries



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Harvard Schl Public Health
MMMletsgo!

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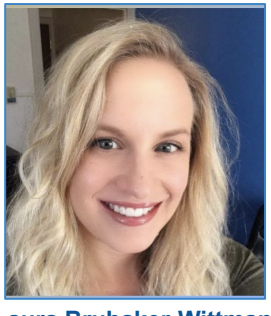
Emerson College
MMMletsgo!



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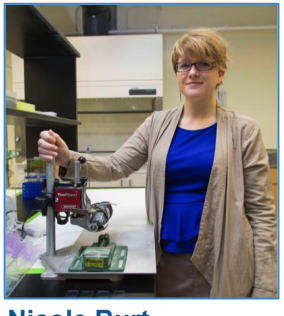

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École St. Gerard
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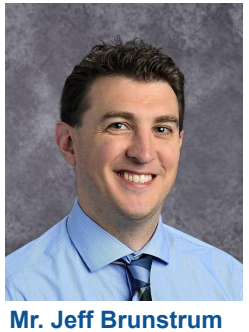
Ms. Jennifer Gabrys
Detroit Country Day School
MMM Trailer



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Hudson Comm. School
MMM Info Presentation

Ms. Kaitlyn Faust
Kankakee Valley High Schl
MMM Info Presentation

Ms. Robin Coffman
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MMM Info Presentation

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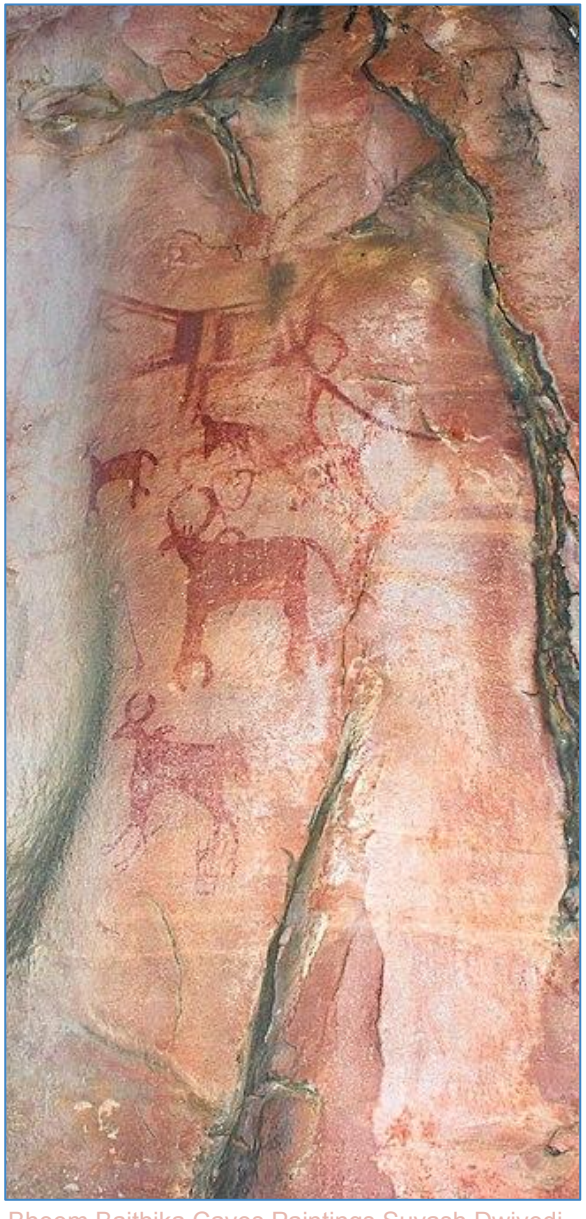

Bheem Baithika Caves Paintings Suyash Dwivedi

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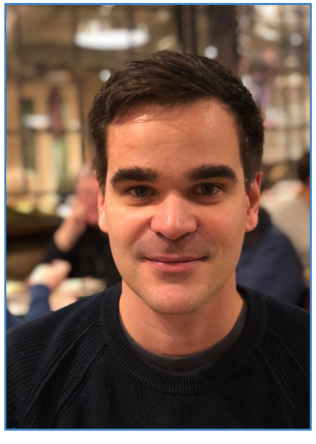

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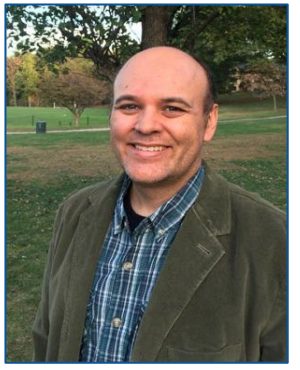

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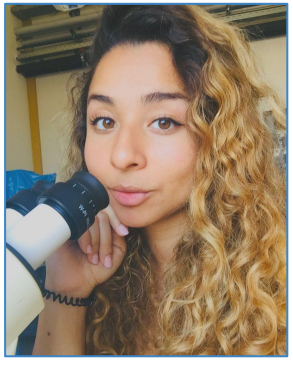

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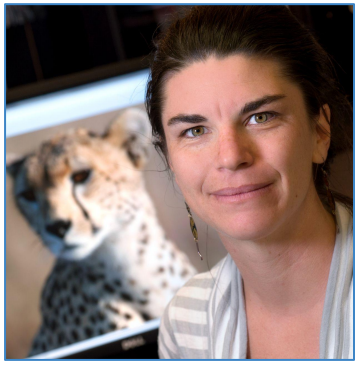

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For more info about March Mammal Madness, see:

Hinde K, CEG. Amorim, AF Brokaw, N Burt, M Casillas, A Chen, T Chestnut, PK Connors, M Dasari, J Dietrick, CF Ditelberg, J Drew, L Durgavich, B Easterling, C Henning, A Hilborn, EK Karlsson, M Kissel, J Kobylecky, J Krell, DN Lee, KM Lesciotto, KL Lewton, JE Light, J Martin, A Murphy, W Nickley, A Núñez-de la Mora, O Pellicer, V Pellicer, AM Perry, SG Schuttler, AC Stone, B Tanis, J Weber, M Wilson, E Willcocks, CN Anderson. 2021. **March Mammal Madness and the Power of Narrative in Science Outreach. eLife.** 10:e65066. DOI: https://doi.org/10.7554/eLife.65066

Roman Mosaic of Animals at the National Museum Damascus; photo by Dosseman

March Mammal Madness Tournament 2013-2022

Research the Contenders!

March Mammal Madness is created and directed by Professor Katie Hinde, Arizona State University
Lesson plan from Dr. Stephanie Schuttler and Katie Hinde

Objectives:

- Students create species profiles of MMM “combatants” identifying adaptations that will help them or hurt them in battle
- Students fill out MMM personal brackets

Timing and Implementation:

- Variable. At least 10-15 minutes, but can be made into a full classroom activity or take place over several days for a few minutes each day
- Students must complete and share info before March 14th (date of MMM “wild card” battle) or March 16th (launch date of the first round)

Materials:

- MMM bracket
- Google drive and Internet

Introduction:

Mammal March Madness (MMM) is an alternate March Madness tournament presenting simulated encounters between mammals (and sometimes non-mammal animals), instead of college basketball. The bracket is run by a team of scientists, using science and probability to determine the outcomes of the “battles.” The goal of Mammal March Madness is to provide a fun and exciting way to spread scientific knowledge about the tree of life, as well as awareness of habitats, ecosystems, conservation, and adaptations. These lesson plans are designed to extend learning of MMM in the classroom aligning content with next generation science standards particularly traits/adaptations, evolutionary relationships, anatomy and physiology, ecosystems, and human impacts.

For more info, visit the Arizona State University March Mammal Madness Library Guide: https://libguides.asu.edu/MarchMammalMadness

Procedure:
In 2022 there are 65 species featured in MMM, many of which you and your students are unlikely to have ever even heard of! The tournament features 16 species per division, plus two wild card competitors who "battle" March 14th to enter the tournament as a 16th seed in WILD North America. For students to make evidence-based predictions on which species should win each battle, they will conduct research and argue from evidence as a class using the Arizona State University's resource page: https://libguides.asu.edu/MarchMammalMadness/Resources.

1. Educators can use a digital platform like a shared Google Drive folder for students to contribute to (in google drive, for each species in MMM, create a blank document within the folder) or can have students create promotional "hype" posters that can be hung on classroom or hallways walls.

2. Briefly discuss what is a mammal. Ask students what are the characteristics unique to mammals and how they differ from other animals. Note that many combatants in 2021 are not mammals.

3. Assign each student species to research for "vital stats" (see #4 below). For example, in a class of 32 students, each student will be assigned (or choose) two different species. (Alternatively, each student can research a first round "Battle" there are N=32) Each student should choose/have a different species or not all of the species will be properly researched.

4. Briefly review the meaning of adaptations/traits. For each species a student researches, they must put the following information in the google drive/poster:
    a. 1 photo or artwork of the species
    b. 1 structural adaptation the animal has that is a strength (structural adaptations = weaponry, armor, camouflage, nutrition, respiration, transport and excretion mechanisms, movement)
    c. The biome the animal lives in
    d. If the species is an herbivore, omnivore, or carnivore
    e. The trophic level of the species (primary, secondary, or tertiary consumer). NOTE: the MMM Team has created a slide deck of this information for K-5 students and the general public. Teachers of Middle School and High school students could instead assign "first round" match-ups to students for them to take the info available about their biome/habitat, diet, place in the food chain, traits/attributes, and size and then predict the likely outcome of the battle. Who wins and what matters- does the habitat favor one or the other or both? Relative sizes and abilities- predatory and/or anti-predator strategies? Would they ignore each other? Are they both herbivores, but one is likely to be dominant over the other? Students could

do this individually and then be partnered with another student assigned the same match-up to see if they came to the same likely outcome or have a different prediction- Students could present to the class their argument from evidence.

5. The students will then advocate (or not, depending) for their animal to be a fierce competitor in MMM. They can do this just for their class or for all of #2022MMM participants to learn about the various species through Twitter. Lots of people participating will not know these species and these videos/tweets will be really helpful to people. They will share the information by:
    a. Brief oral presentations to class
    b. Sharing info in a tweet using the hashtag #2022MMM

6. Students listen to information from their classmates and/or use tweets (from around the world!) to make their choices and fill out their brackets. **Note – students do not have to choose the species they researched to win.** <suggestion for winning points here deleted>

7. Students can additionally explain, justify, & argue from evidence about their predictions for the two combatants that will be in the championship battle in their bracket (what advantages do they have that will help them reach the Final Roar against the combatants they will encounter), and why their predicted champion will win.

8. Example hype posters from previous years:
https://twitter.com/aminakatanaa/status/973005996464529408
https://twitter.com/search?f=tweets&q=%232018MMMK12&src=typd

MMM in the Classroom: TOURNAMENT EVENTS!

March Mammal Madness is created and directed by Professor Katie Hinde, Arizona State University
Lesson plan from Dr. Stephanie Schuttler and Katie Hinde

Objectives:

- Students learn about the species through tweeted-out competitions conducted by scientists from universities around the world
- Students communicate directly with scientists through Twitter using #2022MMM during competitions
- Students update winning species with each round, adding information on behavioral adaptations, environmental impacts, human impacts, and knowledge on species evolutionary history.

Timing and Implementation:

- Variable, but least ~20 minutes at night, 20 minutes in the morning

Materials:

- Worksheets
    - #2022MMM: Round 1 – Behavioral Adaptations (4 copies)
    - #2022MMM: Round 2 – Traits & Scientist Profiles (2 copies)
    - #2022MMM: Round 3 – Sweet 16 Human Impacts (1 copy)
    - #2022MMM: Round 4 – Elite Trait – Environmental Impacts (1 copy)
    - #2022MMM: Round 5 – Final Roar – Evolutionary History (1 copy)
    - #2022MMM: Round 6 – Championship
- Google drive and Twitter
- Depending on time zone, some students may not be able to stay up to watch the "battles" live tweeted- the key battle tweets will be available the next morning at wakelet: https://wakelet.com/@ChrisAnderson2426

Procedure:

1. There are N=32 1st round battles (eight per Division) that are play-by-play announced via twitter (each battle has 15-25 tweets presenting species & battle information prepared by the biologist narrators), N=16 2nd round battles (4 per Division), N=8 3rd round battles (the Sweet 16), N=4 4th round battles (the Elite Trait), N=2 5th round battles (the Final Roar) and the Final Championship. Rounds 1-3 the "battle" occurs in the better seeded species home ecology- they have home court advantage. Rounds 4-6, the battle takes place in a randomized location announced at the start of the battle. In 2021 the randomized locations are (1) Montane Forest (2) Kelp Forest (3) Savanna or (4) Sea Ice. Students are encouraged to follow tweets from the account @2022MMMletsgo on twitter to learn more about the contestants and discover the winners of the battle. Please note that there are official contributors and thousands of fans using the tournament hashtag. For educators who want the streamlined information about the battle and/or assuredly safe content for the classroom context, then they should follow the @2022MMMletsgo because this account only retweets the official tournament tweets.

2. Each night of the battles, the students fill out the attached worksheets in relation to their bracket picks. Each round will have a different focus. The following day, the students will report back to the teachers and have a discussion based on their worksheets.

Round 1 – Physical Traits

Students summarize physical traits of the animals announced by the battle narrators,
especially those that played a role in the outcome.

Round 2 – Behavioral Adaptations & Scientist Profiles

Students describe key behavioral adaptations of the species announced by the battle
narrators, especially behaviors that caused the battle outcome, and look up information
about one scientist/researcher highlighted in one of the battles

Round 3 Sweet 16 –Human Impacts

Students look up IUCN conservation info about the winner of each battle, summarizing
conservation status, threats, and describe current or possible conservation efforts.

Round 4 Elite Trait – Environmental impacts

In round 4, the habitats that animals will battle in will be chosen at random from 4 different ecologies: (1) Swamp Forest (2) Desert Grasslands (3) Sub/tropical Coniferous Forests or (4) Coastal. Students summarize how the environment did or could have played a role in the battle outcome by favoring or disfavoring one or both combatants in each battle.

Round 5 – Final Roar - Evolutionary history

Students summarize the evolutionary history of the winner and using report when competitors in each match-up last shared a common ancestor using TimeTree.org.

Round 6 – Final Championship

Students compare and contrast the #2022MMM Champion with the species they had thought would win the tournament, arguing from new evidence that occurred during the tournament play-by-play or, if their prediction was the Champion identifying new and/or key information that explained how the animal won.

PERMUTATIONS:

Option A: Specific worksheets for each division round 1 that emphasize anatomy & physiology (Why Not Both?), public lands (Wild North America), social gatherings (Mammal Collectives), and special adaptations of females (Queens of the Sea & Sky)

Option B: Genetics Info Worksheet

#2022MMM: Round 1 – Traits

Division:_____

Battle (Species vs. Species)	Which species did you predict would win?	Which species won?	New fun fact you learned about species that lost:	New fun fact you learned about species that won:	What is a physical trait that may help the winning animal win again?

Physical trait examples – body size, teeth (canines! carnassials!), antlers, tusks, reach, temperament, etc.

Name:_____

March Mammal Madness is created & directed by Professor Katie Hinde Arizona State University
Lesson plans and worksheets prepared by Dr. Katie Hinde and Stephanie Schuttler, artwork by artwork by Charon Henning

#2022MMM: Round 2 – Behavioral Adaptations & Scientist Profiles

Divisions:_____

Battle Species vs. Species (circle winner)	Did the winner have a behavioral trait that was important for their win? (If yes, describe the trait)	If any scientists and their research were featured in the battle, list their Name, University, & Research Topic

Behavioral adaptation examples – hunting behaviors (like predatory stalking, ambush), social behaviors, migration, parental care, food processing, learning, social structure of the species (e.g. cooperative group-living)

Name:_____

#2022MMM: Round 3 – Sweet 16 – Human Impacts

Battle Species vs. Species (circle winner)	What is the IUCN.org conservation status of the winning species?	What are the biggest threats to the winner?	For threatened and endangered species, what conservation programs are or could be implemented for protection?

Name:_____

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#2022MMM Round 4 – Elite Trait – Environmental Impacts

Battle Species vs. Species (circle winner)	What is a specific abiotic factor that helped the winner? (e.g. sea ice for polar bears)	Which randomly chosen ecosystem would have been the worst for the winner? Explain why.

Name:_____

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#2022MMM: Round 5 – Final Roar – Evolutionary History

Battle Species vs. Species (circle winner)	When did the combatants last share a common ancestor? (use timetree.org)	Is the winning species a generalist or a specialist? Explain your answer.	What is a closely related species to the winner?

Name:_____

#2022MMM: Round 6 – Championship!!

Who did you predict to be champion?	Who was the official Champion?	Based on everything you know about the Champion, do you think it should have won March Mammal Madness? Why or why not?	Do you still think the species you picked should have been the winner? Why or why not?

Which species do you want to see in #2023MMM (Tweet it out!):_____

Name:_____

ALTERNATE ROUND ONE WORKSHEETS SPECIFIC TO DIVISIONS

(may be particularly useful for High School AP classes)

These worksheets emphasize anatomy & physiology, ecosystems, and classification systems

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Lesson plans and worksheets prepared by Dr. Katie Hinde and Stephanie Schuttler, artwork by artwork by Charon Henning

#2022MMM: Round 1 – Why Not Both?

Battle Species vs. Species (circle winner)	Which species did you predict would win?	For the species that "lost": what are their "both" adaptations & did they impact the outcome?	For the species that "won": what are their "both" adaptations & did they impact the outcome?

Name:_____

#2022MMM: Round 1 – WILD NORTH AMERICA

Battle Species vs. Species (circle winner)	Which species did you predict would win?	For the species that "lost": what is special about their population & what public land is it from?	For the species that "won": what is special about their population & what public land is it from?

Name:_____

#2022MMM: Round 1 – Mammal Collectives

Battle Species vs. Species (circle winner)	For each species, the quirky English language has created mammal collectives, even for species that aren't typically social. What circumstances caused typically solitary species to be social? If species are typically social, what kinds of social behaviors were described?	
	Species that "LOST"	**Species that "WON"**

Name:_____

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Lesson plans and worksheets prepared by Dr. Katie Hinde and Stephanie Schuttler, artwork by artwork by Charon Henning

#2022MMM: Round 1 – Queens of the Sea & Sky

Battle Species vs. Species (circle winner)	For each species, what makes females "special," what information did the scientist-narrator share to explain why this species was featured in this Division of March Mammal Madness. How are they adapted to the sky or sea?	
	Species that "LOST"	**Species that "WON"**

Name:_____

#2022MMM: Genetics Facts

Follow Geneticists Anne Stone @StoneLab_ASU, Melissa Wilson @sexchrlab, Elinor Karlsson @eenork, Jesse Weber @EvolEmpiricist, Eduardo Amorim @cegAmorim, Nate Upham @n8_upham, & Fernando Villanea @FerVillanea

Each battle they tweet genetics & phylogeny info about the competitors
(& an RIP tweet after a combatant loses)

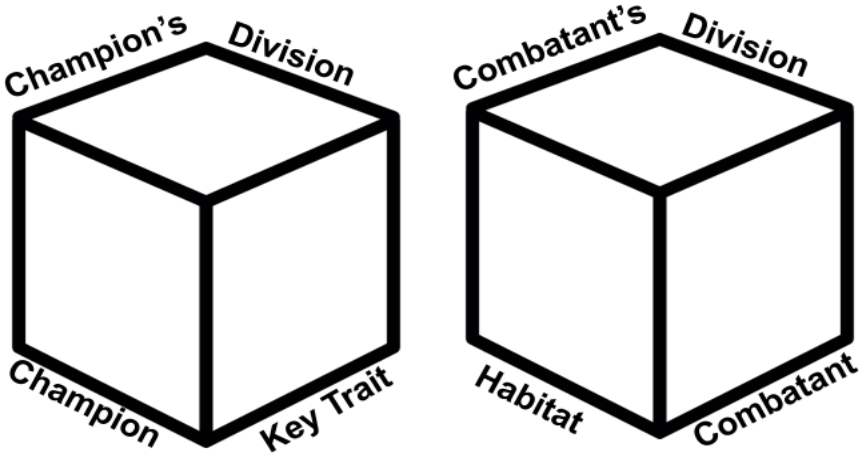
Name: _____ **Division:** _____ **Round:** _____

Battle Species vs. Species	**Describe what you learned from the genetics fun facts & RIP tweet for the competitors**

TUMBLING MMM BLOCKS

A collaborative art project inspired by the street artist Thank You X and the Tumbling Blocks quilting pattern, students can combine individual blocks into a showcase of species and environments. Students customize their own block/cube, then join them all together into a classroom or hallway mural. (adapted from Jill Staake's article on collaborative art projects hosted at weareteachers.com)

Each student creates their 2D block/cube in a systematic approach. Educators could assign students to do art of the combatants that they research (or their chosen Champion), highlighting their key traits that favor their wins or their habitat. The top of the block/cube can refer to the division the animal is in- Why Not Both?, WILD North America, Mammal Collectives, & Queens of the Sea & Sky.



Have the Divisions Color-Coded:

Why Not Both?
Mammal Collectives
WILD North America
Queens of the Sea & Sky

(so totally awesome Mrs. Hayes! –KH)

Depending on supplies and skillset, students can use various media and technique approaches for their blocks/cubes.

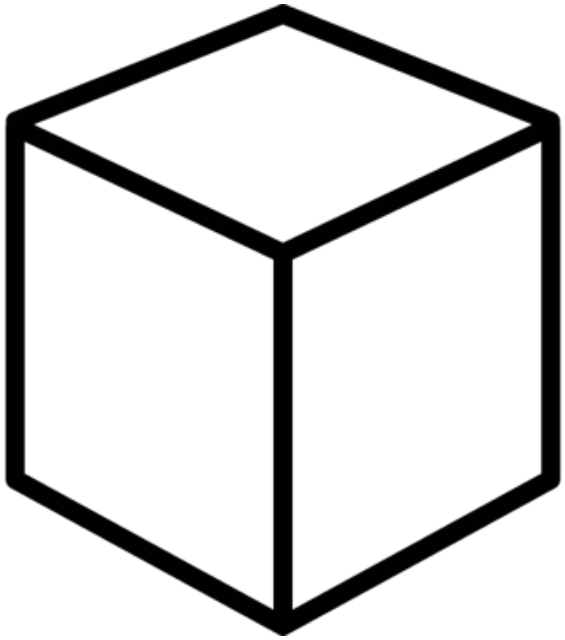
MEDIA

Colored pencils
Markers
Paint
Pastels
Paper & Glue

TECHNIQUE/STYLE

Illusionistic Realism
Collage
Pointillism
Abstract
Paper Mosaic

Note: Educators may consider implementing only one artistic technique among their learners so the final mural manifests a cohesive aesthetic or alternatively, use a different technique for each class so the final murals are differentiated visually among classes or organized as a single "wave" mural that stylistically changes from left to right.



Re-sizeable Block

ANIMAL & ECOSYSTEM HAIKU LESSON

An old silent pond...
A frog jumps into the pond,
splash! Silence again.
-Matsuo Basho

O snail
Climb Mount Fuji,
But slowly, slowly!
-Kobayashi Issa

ground squirrel
balancing its tomato
on the garden fence
- Don Euler

unchallenged danger
Siberian tiger stalks
fearful boars panic
-Peter Iverson

a dandelion
now and then interrupting
the butterfly's dream
-Fukuda Chiyo-ni

a single spider's thread
ties the duckweed
to the shore
-Fukuda Chiyo-ni

LEARNING OBJECTIVES: Describe the traditional rules and conventions of haiku; Interpret examples of haiku; Characterize the image-evoking power of haiku; Develop a vocabulary and ideas for writing haiku; Compose a haiku based on a personal experience.

BACKGROUND:
A Haiku is unrhymed verse conveying a complete image or feeling, and usually about nature or natural things. Haiku poems date from 9th century Japan to the present day. Cool fact for students: Fukuda Chiyo-ni, a master poet of the Edo Period, began creating haiku as a child. She had already gained widespread acclaim as a teenager. A traditional Japanese haiku is a three-line poem with seventeen syllables*, written in a 5/7/5 syllable count.

-Descriptive: most haiku focus sharply on a detail of nature or everyday life.

-Personal: most haiku express a reaction to or reflection on what is described.

-Structure: Haiku are divided into two parts. As they read haiku aloud, students should find that each includes a turning point, where the poet shifts from description to reflection, or shifts from close-up to a broader perspective. In Japanese, this break is marked by what haiku poets call a "cutting word." In English and other languages, the break is often marked by punctuation. This

two-part structure is important to the poetic effect of a haiku, prompting a sense of discovery as one reads or a feeling of sudden insight.

-Language: Haiku should include what Japanese poets call a kigo - a word that gives the reader a clue to the season being described. The kigo can be the name of a season (autumn, winter) or a subtler clue, such as a reference to the harvest or new fallen snow. Through the years, certain signs of the seasons have become conventional in Japanese haiku: cherry blossoms are a kigo for spring, mosquitoes a kigo for summer. Sometimes, too, the kigo will refer to an individual moment in the natural cycle, such as dawn or moonrise, without reference to a particular season. The kigo is also important to the haiku's effect, anchoring the experience it describes in a poetic here and now that helps sharpen the imaginative focus.

Suggested Exercise(s):
Brief Approach: Students craft haiku for MMM combatants before the tournament and/or battles that happen during the tournament. Students can create haiku that are

-descriptive of the animal
-the habitat or ecosystem
-encounters described by scientist-narrators

Extended Approach: Students craft a sequential series of haiku around their tournament champion pick. Students first write a haiku during the pre-tournament research phase about the attributes, lifestyle, and/or environment of their champion species. As the tournament unfolds, students can then craft a series of haiku, one for each round/battle. Note: If their champion is defeated, they can then craft a haiku about the battle in which their champion was eliminated from the tournament and switch to writing haiku about the species that defeated their champion.

PROCESS
Preparation: Before for writing their own haiku, have students brainstorm a glossary of words they might use, based on the rules and conventions of this form of poetry & the context of the animal (habitat, battle location), some terms can be used directly from the battle narrations as well as independent research.

Collaboration: Pair students to edit and suggest improvements to one another's work.

Presentation: Hold an in-class haiku festival, having each student read their poem aloud. (Alternatively, combine written haiku with visual art piece (see Visual Arts Lesson) and have a classroom “Art Show”).

*In Japanese, there are five "moras" in the first and third line, and seven in the second, following the standard 5-7-5 structure of haiku. A mora is a sound unit, much like a syllable, but mora and syllable are not exactly identical (Your Dictionary).

Lesson Plan adapted from the Following Resources:
National Endowment for the Humanities Haiku Lesson Plan
Crayola Haiku Zoo

THE CHAMPIONSHIP BATTLE THAT SHOULD HAVE BEEN!

SCIENCE WRITING LESSON PLAN

Tara Chestnut, Ecologist, National Park Service, Mount Rainier National Park, and
Marwa Mahmoud, Youth and Community Engagement Coordinator, US Forest Service, Mt. Baker-Snoqualmie National Forest
Katie Hinde, BioAnthropologist, Arizona State University

This lesson plan was developed using the Common Core English Language Arts Writing Standards students to argue from evidence for the two combatants the student thinks should have been in or won the championship. If the student accurately predicted the two final combatants AND the outcome, the student can write about the information that they found in their pre-tournament research and any new information gained from scientist narrators that further explained the outcomes. This exercise will reinforce learning from the tournament.

This lesson can be adapted to 3-5, 6-8, and 9-12 grades for specific language arts learning goals.

Section 4

CCSS.ELA-LITERACY.W.4.4
Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

CCSS.ELA-LITERACY.W.4.5
With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 4 here.)

CCSS.ELA-LITERACY.W.4.6
With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others;

demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
Research to Build and Present Knowledge:

CCSS.ELA-LITERACY.W.4.7
Conduct short research projects that build knowledge through investigation of different aspects of a topic.

CCSS.ELA-LITERACY.W.4.8
Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

CCSS.ELA-LITERACY.W.4.9
Draw evidence from non-fiction and informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.W.4.9.A
Apply grade 4 Reading standards to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character's thoughts, words, or actions].").

CCSS.ELA-LITERACY.W.4.9.B
Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").

Introducing the Assignment to the Students:

“The MMM Organizers GOT IT ALL WRONG, the championship battle CLEARLY SHOULD HAVE BEEN <teacher’s predicted final match-up>!!! For this assignment, student’s craft their own battle narrative for the Championship that SHOULD HAVE BEEN.

If students are interested in learning more about science writing:

Blum, D., Knudson, M., & Henig, R. M. (Eds.). (2006). A field guide for science writers. Oxford University Press, USA.

Dwyer, J. (2010). Where the wild books are: A field guide to ecofiction. University of Nevada Press.

Murray, J. A. (1995). *The Sierra Club nature writing handbook: A creative guide*. Sierra Club Books for Children.

March Mammal Madness Worksheet

Date _____

Student's Name_____ Teacher/Class _____

Join the March Mammal Madness Team! (~60 mins, stopping point for two class periods at step 4)

As a Scientist-Narrator you will craft your own battle that SHOULD have been the Championship! Using the primary and secondary resources on the March Mammal Madness LibGuide, you will craft your own March Mammal Madness battle (https://libguides.asu.edu/MarchMammalMadness/Resources)!

1. List the two species you expected to be in the Championship Battle.
2. Using Animal Diversity Web (https://animaldiversity.org/), research both of the animals you chose. The background information should include the animal's size, where it lives, what it eats, its habitat, behavior, and other facts you think are interesting. As you do your research, fill in the data sheet to put all of your research in one place that you can refer back to it as you write your battle.
3. Once you finish your background research, use your own words to write 3-5 sentences introducing each of your animal combatants.
4. The location of your battle can be 1) A nearby National Park, 2) a National Park you would like to visit. Write 1-2 sentences about the habitat of your battle location (Hint: You can refer back to your essay to describe the habitat!).
5. Next you will write 1-2 sentences about how well suited the animals you chose are to the habitat in your park. For example, is your park in the desert and does one of your animals live in the ocean? How will this animal respond to an environment that is very different than the one it's used to living in?
6. Describe an interaction between the two animals using the facts about their behavior you learned in your research and from March Mammal Madness. When the animals meet, how do they interact? The interactions should be supported by the facts of your research, not made up. The description should be a descriptive, suspenseful play-by-play of the encounter weaving together science facts within the dynamic action.
7. Declare a winner! (*Teacher: consider having students share their battles with other students as a share-pair, in groups or as a class, reading aloud or as a poster or powerpoint slide*).

Background research datasheet

Name of Finalist 1

_____

Size of animal (length, weight)

Where does it usually live?

What does it usually eat?

Description of habitat

Description of behaviors

Other interesting facts

Link to image or video

Name of Finalist 2

_____

Size of animal (length, weight)

Where does it usually live?

What does it usually eat?

Description of habitat

Description of behaviors

Other interesting facts

Link to image or video

Now you're ready to CRAFT your Battle Narrative

Example Play-By-Plays: *https://libguides.asu.edu/MarchMammalMadness/HowToPlay*

MMM EVERY KID OUTDOORS 4TH GRADE LANGUAGE ARTS WRITING LESSON PLAN

Tara Chestnut, Ecologist, National Park Service, Mount Rainier National Park, and **Marwa Mahmoud**, Youth and Community Engagement Coordinator, US Forest Service, Mt. Baker-Snoqualmie National Forest
Katie Hinde, BioAnthropologist, Arizona State University

This lesson plan was developed using the Common Core English Language Arts Writing Standards for 4th grade students with the purpose of educating learners, educators, parents and guardians about **Federal Public Lands in the United States, the Every Kid Outdoors Initiative** and how to obtain **free passes for 4th graders** to access Federal public lands.

The lesson plan has three sections that can be taught during a one-week period or as standalone sections (with minor modifications). The standards each section address are:

Section 1
CCSS.ELA-LITERACY.W.4.1
Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

CCSS.ELA-LITERACY.W.4.1.A
Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.
CCSS.ELA-LITERACY.W.4.1.B
Provide reasons that are supported by facts and details.
CCSS.ELA-LITERACY.W.4.1.C
Link opinion and reasons using words and phrases (e.g., *for instance*, *in order to*, *in addition*).

CCSS.ELA-LITERACY.W.4.1.D
Provide a concluding statement or section related to the opinion presented.

Section 2

CCSS.ELA-LITERACY.W.4.2
Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.4.2.A
Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.4.2.B
Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

CCSS.ELA-LITERACY.W.4.2.C
Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*).

CCSS.ELA-LITERACY.W.4.2.D
Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.4.2.E
Provide a concluding statement or section related to the information or explanation presented.

Section 3

CCSS.ELA-LITERACY.W.4.3
Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.W.4.3.A
Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.

CCSS.ELA-LITERACY.W.4.3.B
Use dialogue and description to develop experiences and events or show the responses of characters to situations.

CCSS.ELA-LITERACY.W.4.3.C
Use a variety of transitional words and phrases to manage the sequence of events.

CCSS.ELA-LITERACY.W.4.3.D
Use concrete words and phrases and sensory details to convey experiences and events precisely.

CCSS.ELA-LITERACY.W.4.3.E
Provide a conclusion that follows from the narrated experiences or events.

TEACHER PREPARATION:

Section 1: America's Public Lands!
Section 2: Find Your Local Public Lands!
Section 3: Plan Your Park Adventure!
BONUS SECTION: Sign Up for your FREE National Public Lands Pass!

Sections 1, 2, 3,

1.Review the pdf below for lesson plan background information.
https://www.wilderness.org/sites/default/files/media/file/Module 1 - Reading.pdf

2.Download two maps from this USGS website. Maps are poster sized and may be printed and placed on the wall in a classroom or hallway. They can also be screen-shared for virtual lessons. https://www.usgs.gov/programs/gap-analysis-project/science/protected-areas-resources

First Map: Downloadable PAD-US 2.0 National Poster Maps Federal Managers
Second Map: Downloadable PAD-US 2.0 State Poster Maps (download map for your state)

Sections 2, 3 and BONUS

3.Review the main National Park Service website and Find Your Park dropdown menu
https://www.nps.gov/

4.Review the Every Kid Outdoors website https://everykidoutdoors.gov/

Introduction to Lesson

(verbal, 10-15 mins)

Teacher: Have both maps downloaded and available for students to view throughout the lesson. Begin Section 1 with the National Poster Federal Managers Map on-screen or printed poster-sized and switch to your state map when prompted in the lesson plan. Instructions for Sections 2, 3 and 4 are detailed in the worksheets. Tips: Demonstrate the Find Your Park drop down menu for the whole class at the beginning of Sections 2 and 3. Post worksheet questions for students to reference during the lesson.

In 2022, the March Mammal Madness Tournament has an entire Division dedicated to mammals on public lands in North America, most of them in the United States. Public lands are areas of land and water that today are owned collectively by U.S. citizens and managed by government agencies. Public lands are different from private lands, which are owned by an individual, a business or another type of non-governmental organization. Although public lands are now considered to be owned collectively by United States citizens, these lands include ancestral homelands, migration routes, ceremonial grounds, and hunting and harvesting places for Indigenous Peoples who have been forcibly removed.

Most public lands are managed by the federal government, by a state or local government, or by a sovereign Tribal nation. This lesson plan will focus primarily on public lands managed by the United States (also called the federal) government. Not all federally managed lands are public; for example, access is tightly restricted on military bases. However, across the country, there are more than 640 million acres of parks, forests, preserves, and historic sites that are open to the public. Most federal public lands are managed by four agencies: National Park Service, Forest Service, Bureau of Land Management, and Fish and Wildlife Service.

Teacher: Refer to national map and point out a few well known public lands in different areas of the country (e.g. Yellowstone National Park (WY), Grand Canyon National Park (AZ), Upper Mississippi National Wildlife Refuge (MN, WI, IL, IA), National Mall (WA DC), Selma to Montgomery National Historic Trail (AL), Trail of Tears National Historic Trail (GA to OK)).

There are 12 main types of land designations on federal public lands (*Teacher: refer to page 2 of the wilderness.org pdf for the full list*). Some lands have special designations that protect them for recreation and conservation. Others are preserved for wildlife and the intrinsic value of the ecosystem. Others are managed for more intensive commercial uses such as mining, logging, grazing, and energy development. Still others are preserved for their cultural significance. Different designations and agencies have different management mandates, which determine the specific approaches to administering and regulating public lands.

Refer to state map for remainder of Section 1. Have students work individually or in pairs, spending about 5 mins to study the state map and provide their reflections on the worksheet.

AMERICA'S PUBLIC LANDS!

Student's Name_____ Date _____
Teacher/Class _____

1. What are some of the public lands near you? Look at the map of your state and write down three public lands that are closest to where you live.

2. What do you notice about how the federal public lands are spaced across the state? Are there any in or near urban areas (cities)? Are there any in rural areas? Make a list of the public lands in your state that are urban and rural.

   URBAN PUBLIC LANDS RURAL PUBLIC LANDS

3. What are the different types of public lands in your state? For example, National Park, National Forest, National Wildlife Refuge, Historic Trail, etc. List 4 of the different types you see on the map. (*Teacher: based on student answers, provide an explanation of the land designations from page 2 of the wilderness.org pdf*).

4. In 3-4 full sentences, describe the different types of activities you can do on these public lands. (*Teacher: use page 3 of the wilderness.org pdf to prompt students*)

5. Why do you think it is important to let people access public lands? (3-4 sentences)

6. Which public lands would you like to visit (or have already visited)? List three.

FIND YOUR LOCAL PUBLIC LAND!

Student's Name_____ Date _____
Teacher/Class _____

Section 2 – Find Your Park! (35 mins)
Working individually, go to nps.gov and click on "Find a Park." In the drop down menu, click on your state. Pick one park unit in your state and use the linked webpage to learn more. After exploring the park's website, write a short essay that includes the following information:

- What is the name of the park unit you chose?
- When was the park established?
- Why was it established?
- Describe and draw a picture of what the park looks like. For example:
    - If there are buildings and structures, what materials are they made from, how tall are they, what are/were the buildings used for.
    - If it's a trail, is it a walking/hiking trail or a point along an historic trail? Where does the trail begin and end?
    - If it's a park or wilderness, describe the types of plants and animals in the park.
- How would you prepare for a visit to the park?

Find the Mammals in Your Park!
Working individually, go to irma.nps.gov/NPSpecies/Search/SpeciesList. Click on Choose a Park to Select the Park you selected above, select "Mammals" as the category and find out all the mammals found in your park!

- Are any carnivores found in your park? Describe one.
- Are any 2022 MMM Combatants in your Park? List all
- Pick two mammals from your park and describe how you think they interact: Does one hunt the other one? Are they plant-eaters (herbivores) that eat the same thing? Is one a big carnivore like a bear or cougar (called an apex predator) or a small carnivore like a bobcat or badger (called a meso-predator)?

PLAN YOUR PARK ADVENTURE!

Student's Name_____ Date _____

Teacher/Class _____
Section 3 – Adventure Time!
It's adventure time! Working individually, return to the nps.gov and click on "Find a Park." In the drop down menu, click on ANY state you are interested in learning more about. Pick one park unit in the state and use the linked webpage to learn more. Write an essay using the following questions to guide you through your adventure! Use your imagination! In addition to writing about your adventure, you can draw pictures to illustrate your trip!

- Where will you go?
- Why did you choose that place?
- How will you prepare for your trip?
- What time of year will you visit?
- What will you do when you visit?
- What are some plants and animals you might see?
- What type of history will you learn about?
- What experiences do you hope to have during your adventure? Will you go hiking? Will you visit museums? Will you become a Junior Ranger?

What mammals will you look for on this Adventure?
Working individually, go to irma.nps.gov/NPSpecies/Search/SpeciesList. Click on Choose a Park to Select the Park you selected above, select "Mammals" as the category and find out all the mammals found in your park!

- What's a BIG Mammal you might see at that park?
- What's a SMALL Mammal you might see at that park?
- Imagine you are sleeping in your tent at the campground in the park, are there nocturnal animals active at night that you would listen for? How would the nocturnal animals use their senses at night?
- What 2022MMM Combatants are at your park? What warnings does the park have about wild mammals in the park?

GET YOUR PARK PASS!

Student's Name_____ Date _____

Teacher/Class _____

Help your 4th grade US students go through the step by step guide to order their Park Pass (the portal has student and educator portals!)

https://everykidoutdoors.gov/

Mammals March Madness (MMM) for the Younger Crowd (K-5)

Prepped by Jenna Kissel
MMM Education Engagement Coordinator

Welcome to Mammals March Madness! Younger kids can (and should) absolutely participate in filling out a bracket and play along. While older students can dive deep into the research of the hunting habits of apex predators or learn about the environmental adaptation of desert animals, younger students may simply pick their bracket based on nothing more than seeing a picture of the animal. This can still be a great discovery experience for the students to learn the names of animals they never knew existed (the hagfish!) or learn the differences between herbivore, omnivore, and carnivore.

PICKING YOUR WINNERS:
While spending time learning about animals can help fill out the bracket, there are elements of chance in the match-ups. Picking outcomes can often be a mix of gut feelings, preferences for the cute animal, and research. And upsets can and do happen- for example the #3 seed Quokka (in this case the cute one) went off searching for food leaving the #14 seed Numbat on the field to advance to the next round. Few could have predicted that outcome except someone with the confidence of a kid in a superhero tee-shirt. While it would be hard to get 3rd graders to fill out a table on mammal body size and tooth types, they love to fill out the "who do you think wins?" brackets (and probably learn more while doing it!). Children as young as 3 have filled out brackets just based on photos of the competitors. Animal battles, fun for the whole family!

To help support research by younger players, we've added some key resources:

- 2022 Combatant Info Slides
    - -Picture of animal
    - -Traits useful for "battle"
    - -Biome
    - -Diet
    - -Food Chain Position
        - -Relative size compared to kids and adults

- JUMBO BRACKET with more writing space printed across 5 sheets of paper.

DURING THE TOURNAMENT & FINDING OUT RESULTS:
You know what kids love? Weird animal facts. MMM is full of weird animal facts. Did you know a male platypus is venomous but only for part of the year? There is a fact that will come up the next time you watch Phineas and Ferb… While rarely the battles can get a bit… ah… gruesome (Katie shouting from out of frame "THAT'S ACCURACY!"), unless the students are actively reading the Twitter battles, these scenarios can be glossed over by teachers and parents when kids are told the results the next day. Getting the results can happen in 3 ways:

- Follow the action "live" on Twitter tournament nights by following @2022MMMletsgo on Twitter
- Watch MC Marmot the next morning, that critter is adorable
- Check the 2021 Results sports summaries posted at the ASU March Mammal Madness LibGuide there will also be a link to the play-by-play for every battle detail.

SOME MORE PRO-TIPS:
1. Have fun!
2. Print the bracket (print extra for the inevitable spills, rips or getting lost. Did my 2018 half filled bracket turn up as a bookmark a year later? Maaaybe…)
3. Do not expect to fill out the bracket in one sitting especially with younger ones (or older ones). Don't even expect to do a whole Round 1 division in one sitting.
    a. If kiddo only fills out one division they can cheer hard for that division
    b. Did they not fill out a bracket at all? That is okay too, they can still follow along and hear the outcomes. Give that kiddo the bracket when it is down to eight competitors
4. The Champion has most often been a #1 seed, while many upsets happen it probably will be a good bet to coax the student to pick a higher ranked animal as ultimate champion. But heads up, in the last few years, worse seeds have made it to the Championship.
5. Don't stay up late on Twitter watching the battle, the results will be posted the next day. The early rounds last a long time, it will be a late night. You can wear your lucky hat to bed dreaming of a bat-eared Fox victory victory but it won't change the outcome, get your sleep
6. Drink water, that isn't important to MMM but you probably didn't drink enough today
7. Have fun! (So important it is listed twice) The tournament is not about the points accumulated or how many animals kids correctly picked to advance. The MMM motto is "If you're learning, you're winning" and just looking at these different animals and seeing the incredible diversity of life is a big thing to learn, so it's a very big win. Some of the specific animal details may become vague or lost to time, but parents write to tell us about their kids recognizing combatant animals on TV programs, at zoos, or the books they gravitate on the next trip to the library.

HAPPY BRACKETING!!!

March Mammal Madness Festival

8AM-Noon & 1-3PM EST February 25, 2022

Celebrating the 10th Annual MMM

Roman Mosaic of Animals at the National Museum Damascus, photo by Dosseman

Join the MMM team as we discuss animals, ecosystems, brackets, and battles! We'll also discuss what we do as biologists, geneticists, animal behaviorists, mamalogists, paleotologists, and artists and how we studied to dig up fossils, observe animals in the wild, and explore the tree of life. We might even drop some pro-tips for picking your winner and what's in store for combatants in 2022!

JOIN US 8AM-4PM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
8AM EST February 25, 2022

Celebrating the 10th Annual MMM

Lara Durgavich, PhD

Primate Endocrinologist
Lecturer, Harvard U

Melissa Wilson, PhD

Integrative Biologist
Associate Professor
Arizona State U

Katie Hinde, PhD

Lactation Biologist
Associate Professor
Arizona State U

Marc Kissel, PhD

Paleoanthropologist
Assistant Professor
Appalachian State U

Join us for a March Mammal Madness retrospective spectacular as we discuss animal traits, environments, and human impacts that have made a big difference in past MMM battles. First-time MMM players and long-time MMM aficionados will appreciate the science and humor as Lara, Melissa, Katie, and Marc reminisce about previous tournaments, provide pro-tips for picking your winner, and answer questions about what's in store for combatants in 2022!

JOIN US at 8AM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
9AM EST February 25, 2022

MMM Celebrates ANIMAL BEHAVIOR

Asia Murphy, PhD

Wildlife Biologist
UC Santa Cruz

Anne Hilborn, PhD

Senior Environmental Scientist, California Dept of Fish & Wildlife

Mauna Dasari, PhD

Wildlife Microbiologist
University of Pittsburgh

Patrice Connors, PhD

Mammalogist
Assistant Professor
Colorado Mesa U

Join us as panelists discuss the WILD evidence-based animal "action" in March Mammal Madness. Learn how to become an animal behaviorist and the ins & outs of conducting animal observations. First-time MMM players and long-time MMM aficionados will appreciate the science and humor as Asia, Anne, Mauna, and Patrice discuss their most amazing experiences tracking, camera-trapping, and observing wild animals around the world.

JOIN US at 9AM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
10AM EST February 25, 2022

MMM Celebrates Genetics & the Tree of Life

Anne Stone, PhD

Anthropological Geneticist
Regent's Professor
Arizona State U

Jessica Light, PhD

Mammalogist
Associate Professor
Texas A&M

Elinor Karlsson, PhD

Bioinformatician
Associate Professor
UMass Chan Medical School

Eduardo Amorim, PhD

Human Geneticist
Associate Professor
Cal State University Northridge

Join us as panelists discuss the genetics, genomics, and phylogenies that connect all biological life! First-time MMM players and long-time MMM aficionados will laugh and learn as Anne, Jessica, Elinor, and Eduardo discuss ancient DNA, dire wolves, our extinct relatives, and studying genetics among wild animals living today and tens of thousands of years ago!

JOIN US at 10AM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
11AM EST February 25, 2022

MMM Celebrates ART & DESIGN

Charon Henning, BIS

Art Director
March Mammal Madness

Will Nickley, MFA

Graphic Designer
Assistant Professor
Ohio State University

Join us to learn about how to bring science and art together in the fields of scientific illustration and graphic design. Here Charon and Will talk about how they artistically trained and scientifically prepare to bring their skills and talent to March Mammal Madness. Make sure you ask about drawing fossils, circus sideshows and flying robotics. Bring a pencil & paper too!

JOIN US at 11AM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
1PM EST February 25, 2022

MMM Celebrates PALEONTOLOGY

Kristi Lewton, PhD

Evolutionary Morphologist
Associate Professor
U Southern California

Yara Haridy, PhD

Paleontologist, Museum für Naturkunde

Marc Kissel, PhD

Paleoanthropologist
Appalachian State U

Brian Tanis, PhD

Zoologist, Instructor
Oregon State University
Cascades

Join us as panelists describe some of the incredible fossil mammals to have roamed the earth and "battled" in March Mammal Madness. First-time MMM players and long-time MMM aficionados will appreciate the laughter and learning as Kristi, Yara, Marc, and Brian talk about their most amazing experiences studying fossil animals at field sites, museums, and universities!

JOIN US at 1PM EST with Special Thanks to Exploring by the Seat of Your Pants

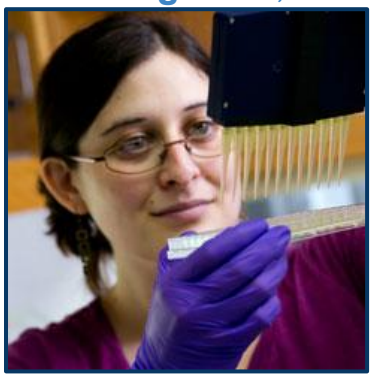
March Mammal Madness Festival
2PM EST February 25, 2022

MMM Celebrates ANIMAL BEHAVIOR

Danielle Lee, PhD

Mammalogist
Assistant Professor
Southern Illinois U
Edwardsville

Lara Durgavich, PhD

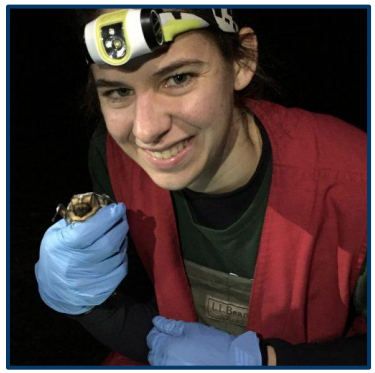


Bioanthropologist
Lecturer, Harvard U

Katie Hinde, PhD

Primatologist
Associate Professor
Arizona State U

Alyson Brokaw, PhD



Mammalogist
Lehigh University

Join us as panelists discuss the WILD evidence-based animal "action" in March Mammal Madness. Learn how to become an animal behaviorist and the ins & outs of conducting animal observations. First-time MMM players and long-time MMM aficionados will appreciate the science and humor as Asia, Lara, Katie, and Alyson discuss their most amazing experiences tracking, camera-trapping, and observing animals around the world.

JOIN US at 2PM EST with Special Thanks to Exploring by the Seat of Your Pants

March Mammal Madness Festival
3PM EST February 25, 2022

Celebrating the 10th Annual MMM

Anali Perry, MS

Scholarly Communication Librarian
Arizona State U

Charon Henning, BIS

Art Director
March Mammal Madness

Kristi Lewton, PhD

Evolutionary Morphologist
Associate Professor
U Southern California

Katie Hinde, PhD

Bioanthropologist
Associate Professor
Arizona State U

Join us for a March Mammal Madness retrospective spectacular as we discuss animal traits, environments, and human impacts that have made a big difference in past MMM battles. First-time MMM players and long-time MMM aficionados will appreciate the science and humor as Anali, Charon, Kristi, and Katie reminisce about previous tournaments, provide pro-tips for picking your winner, and answer questions about what's in store for combatants in 2022!

JOIN US at 3PM EST with Special Thanks to Exploring by the Seat of Your Pants