



Compendium  
of the  
12th Annual  
March Mammal Madness

2024 Tournament

“MMM Celebrates the Arts!”

Proceedings of the  
Noble Zoological Society

Series C Performance Sciences

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‘Describing at Large

**Their True and Lively Figure, their several Names, Conditions, Kinds, Virtues (both Natural and Fanciful), Countries of their Species, their Love and Hatred to Humankind, and the wonderful work of Natural Selection in their Evolution, Preservation, and Destruction.**

Interwoven with curious variety of **Creative Narrations** out of Academic Literatures, Scholars, Artists, Scientists, and Poets. Illustrated with diverse Graphics and Emblems both pleasant and profitable for Students of all Faculties and Professions.’

The above description satirically adapted from, and with apologies to: Edward Topsell. 1658. History of Four-footed Beasts and Serpents. Collected out of the writings of Conradus Gesner and Other Authors. Printed by E. Cote for G. Sawbridge, T. Williams and T. Johnson. London. Available in 2023 at [PublicDomainReview.org](https://PublicDomainReview.org)

Cover Image: Adolphe Millot' Illustrations for Le Larousse Pour Tous. 1909; public domain.  
Image (this page): Photograph of a grumpy Bandit transformed into sketch using photo editing software.

*For Nature*



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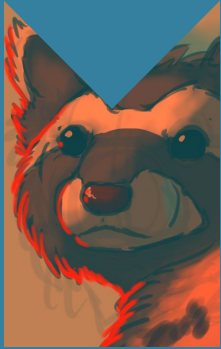
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2024 MARCH  
MAMMAL  
MADNESS

The text '2024 MARCH MAMMAL MADNESS' is presented in a bold, sans-serif font across three lines. The letters are filled with various shades of blue and brown. Each letter contains a white silhouette of a different mammal. For example, the '2' features a deer, the 'M' in 'MARCH' shows a cheetah, the 'A' in 'MAMMAL' depicts a seal, and the 'S' in 'MADNESS' shows a deer with antlers.

***"If you're learning, you're winning!"***





# 2024 HIGHLIGHTS

- **Global interest from 142 countries across 6 continents**
- **>1 Million pageviews of the ASU MMM LibGuide with player, educator, & learner portals.**
- **>9500 Educators requested materials to use with N>870,000 Learners**
- **Over 50% of all counties in the United States had at least one educator requesting MMMaterials**
- **MMM reached 2-3% of all public high school and middle school students in the USA**

- **60+ volunteer scientists, artists, librarians, & educators create MMM annually**



**15k Likes  
18k Followers**



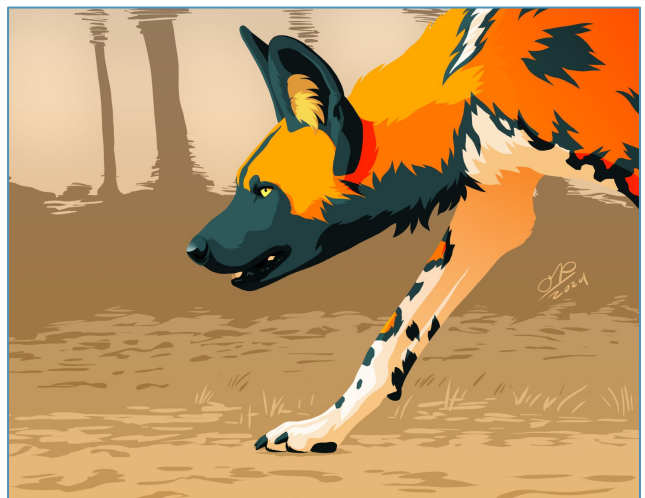
**34k Followers**



**YouTube**

**12.4k Subscribers  
Reached 2 Million Views**

Marbled Polecat • Olivia Pellicer  
Harvest Mouse • Valeria Pellicer  
Fork-Marked Lemur • Mary Casillas  
African Painted Dog • Olivia Pellicer





Fight between a Javanese rhinoceros and two tigers / Raden Saleh 1840 Wikimedia Commons / Public Domain

**Welcome to March Mammal Madness:** Since 2013, MMM asks the question “Who Would Win?” when two animals encounter each other in an absurdly complex and wonderfully nerdy way... a simulated tournament within a structured game universe! 2024 is extra special though, because this year marks the 10th tournament since Charon Henning launched the MMM ART TEAM! Beginning in 2015, Charon and her colleagues have created hundreds of illustrations of the MMM combatants.

Each year, contributors and players alike exclaim over the marvelous depictions of the animals, their traits, and habitats. Artwork essentially contributes to our understanding of animals. Indeed, scientific study of the natural world has always been enhanced when paired with the creative arts. Moreover, integrating art into science education improves student learning and why MMM added visual and language arts lesson plans in 2020.

But humans have artistically depicted animals for tens of thousands of years. Long before canvases and computers, artists immortalized animals in rock paintings, carved wood, embroidered fabric, chiseled marble, sculpted clay, worked leather, casted metal, and tattooed skin... and continue to do so today. For these reasons and more, in 2024 **MMM CELEBRATES THE ARTS!**

And our usual tactic of 2 all mammal divisions is suspended, in 2024 all divisions will feature combatants from across the Tree of Life!



# 2024 DIVISIONS

In 2024, each division celebrates a different form of human artistry from the the performance arts to the literary arts to the culinary arts to to the visual arts, finding incredible combatants that fall within these thematic domains of these divisions.

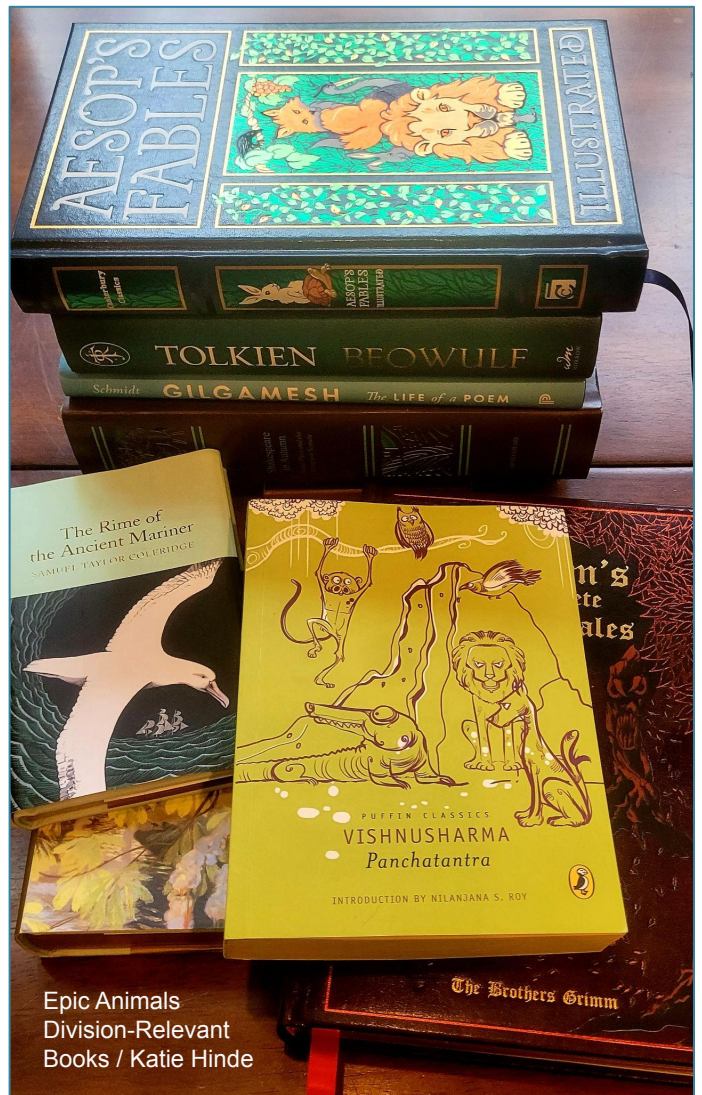
From a tantalizing courtship dance to demonstrations of intimidating power, from a waggle dance of a food location to a tricky mother's feeble cries as she drags a "broken" wing to lure a predator away from her nest of chicks, many animals are peak performers. We applaud these showboats in the **TAKE A BOW DIVISION!**



*Apis mellifera* / USGS Bee Inventory and Monitoring Lab / Wikimedia Commons / Public Domain

Humans are story-tellers and story-listeners. Animals feature prominently throughout oral tradition, folklore, and mythology. From the most ancient recorded epics to more recent literary masterpieces are tales of adventure and animal

encounters. Some especially notable species appear again and again across time, geography, and culture. And some animals are named forworks of words, from novels to poem to song to screenplays. We honor some of these species in our **EPIC ANIMALS DIVISION!**



Epic Animals  
Division-Relevant  
Books / Katie Hinde



# 2024 DIVISIONS

Some carnivores have particularly specialized traits for acquiring, chewing, or digesting their meals. Similarly, some herbivores can safely consume high levels of toxins. And some truly fascinating species have adapted to dietary niches of really, *really* specific foods. Gird your stomachs and get ready to toast these combatants and their comestible curiosities in the **CONNOISSEUR CRITTERS DIVISION!** #HeardChef



Koala mother & infant in Eucalyptus by K.E. Hartig 1911 / Brehms Tierleben. Allgemeine Kunde des Tierreichs / Wikimedia Commons / Public Domain



Mural in Mazatlán / photo by Wonderlane/ Wikimedia Commons / Public Domain

Last, but rarely overlooked, these brilliant beasts combine colors, sometimes across a spectrum only they can see, on their flamboyant forms. To paraphrase Kermit, “*why are there so many, species with rainbows, and what’s with their vibrant hides?*” Get ready to salute these striking smoke shows in the **RAINBOW COLLECTION DIVISION!**



Tamarin lion à tête dorée du zoo de Mulhouse / André Alliot / Wikimedia Commons / Public Domain





Sun	Mon	Tue	Wed	Thu	Fri	Sat
3 <b>MARCH</b>	4	5	6	7	8	9
<b>RESEARCH COMBATANTS! PICK YOUR CHAMPION!</b>						
10 Rethink your whole bracket in agonies of second-guesses	11 <b>WILD CARD</b>	12	13 <b>R1: Epic Animals</b>	14 <b>R1: Connoisseur Critters</b>	15	16
17	18 <b>R1: Rainbow Collection</b>	19	20 <b>R1: Take a Bow</b>	21 <b>R2: EA &amp; CC</b>	22	23
24	25 <b>R2: RC &amp; TaB</b>	26	27 <b>SWEET SIXTEEN</b>	28 <b>ELITE TRAIT</b>	29	30
31	1 <b>FINAL ROAR</b>	2	3	4	5	



Animal silhouettes from PhyloPic.org, Public Domain. Thank you Margot Michaud et al.

[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)

### TOURNAMENT CALENDAR

The **2024 Bracket Drop** will be on **February 22, National Wildlife Day**. As this is a leap year, players and learners will have 11 business days to research their combatants and select their champion. Ideally this will be by the WILD CARD battle on March 11th, but really the appreciable action begins with the evening of Round 1: Epic Animals, on March 13th.

Educator materials will be available **shortly** ahead of bracket day (educators who have signed up with their email at the [EDUCATOR REQUEST & SURVEY](#) will get an email notification when the MMMaterials are available). Many educators create additional MMM resources that are submitted via a

link to a form on the LibGuide with the database of resources then available via a link on the LibGuide.

In our annual survey, educators have requested more time for working with learners on MMM. To accommodate that request we have extended the time between bracket drop and tournament start. Sadly, some shady characters were signing up for early access to sell MMMaterials online, leaking MMM spoilers, and exploiting teaMMM efforts. Our only way to thwart such brigands and still manage MMM was release MMMaterials to everyone at the same time.

**Thank you for understanding!**



**New for 2024!** A detailed Bracket Guide that will include the rules of the MMM universe, how winners are determined, and how winners are revealed. This will allow a streamlined tournament explainer. The deluge of information and resources at the LibGuide can sometimes make it easy to overlook the finer points of the game structure of March Mammal Madness.

The full 2024 logo will be released with the bracket on February 22, but the color palette was derived from nature! Using the [coolers.co](https://coolers.co) website, we created the palette specifically from a gorgeous photo of a tidal glacier, which I can neither confirm or deny is one of the random habitats that begin to kick in with the Elite Trait battles.



patano / Wikimedia Commons / CC-BY-SA 3.0



PENGUIN CLASSICS

CHECK THE LIBGUIDE

*Professor Katie Hinde*

*Not at the LibGuide? Not Released Yet.*

2024 will be the final year battles will be live-announced on the platform formerly called Twitter. Now that X accounts are mandatory to view tweets, secondary platforms like Tweetdeck are blocked, and the community ecology is increasingly dominated by bots, vipers, trolls, and predators, we will transition to a better ecosystem for 2025. In the meantime, we will be providing LibGuide resources so that all tournament content is readily available without using any social media. We have additionally revised lesson plans so student assignments do not involve X activities.

# 2024 MARCH MAMMAL MADNESS

**New for 2024 cont.** As “March Mammal Madness Celebrates the Arts!” in 2024, we will be highlighting our own incredible Art Division, especially the combatant illustrators Valeria Pellicer, Mary Casillas Freisner, Olivia Pellicer, & Charon Henning to the right. We are also excited that some museums, zoos, and conservation groups will be showcasing the ways that art is essential to their work- from designing and constructing exhibits, public engagement campaigns, and educational materials. Lastly MMM will highlight how art and nature are essential to human well-being, the many ways we can bring art and nature into our lives, and how to art responsibly in nature. [The 2024 Combatant Valentines, and all previous Valentine sheets can be downloaded here.](#) 2024 will be a non-stop extravaganza of science!



**March Mammal Madness**

Wander that low rolling gait my way...

“Adult bu in early [ threaten spacing Deceml bulls. M higher highs until n Citati seal A

I'd save a seat on the beach for you!

**Leatherback**

“Male migration to low-latitude suggest mi bre Nov Panel femal Citation: and repro

**LEATHERBACK TURTLE**

Well I would swim 900 miles and I would swim 900 more

**2024 COMBATANT VALENTINES!**

# 2024 MARCH MAMMALS MADNESS

*"If you're learning, you're winning!"*

**ALL TOURNAMENT INFO:**  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
**NOTE: MMM includes many non-mammal species**

## EPIC ANIMALS

- Your Name Goes Here
- 1 Sperm Whale
  - 16 Schizomid
  - 8 Raven
  - 9 Albatross
  - 5 Stag
  - 12 Starling
  - 4 Wolf
  - 13 Mouse
  - 6 Boar
  - 11 Indian Grey Mongoose
  - 3 Tiger
  - 14 Catfish
  - 7 Lucy
  - 10 Bigeye Houndshark
  - 2 Giant Squid
  - 15 Tarzan Chameleon

**WILD CARD WINNER**  
1 POINT

**ROUND 1 WINNERS**  
1 POINT

**ROUND 2 WINNERS**  
2 POINTS

**ROUND 3 WINNERS**  
3 POINTS

**ROUND 4 WINNERS**  
5 POINTS

**ROUND 5 WINNERS**  
8 POINTS

**CHAMPION**  
13 POINTS

**ROUND 1 WINNERS**  
1 POINT

**ROUND 2 WINNERS**  
2 POINTS

**ROUND 3 WINNERS**  
3 POINTS

**ROUND 4 WINNERS**  
5 POINTS

**ROUND 5 WINNERS**  
8 POINTS

**CONNOISSEUR CRITTERS**

- 1 Kob
- 16 Bear's Head
- 8 Chestnut-headed Bee-eater
- 9 Hairly-legged Bee
- 5 Tufted Ground Squirrel
- 12 Wichita Mountains Pillsnail
- 4 Koala
- 13 Cobra Lily
- 6 Fork-marked Lemur
- 11 Barfly
- 3 Porcupine
- 14 Velvet Worm
- 7 Pitcher Plant
- 10 Northern Short-tailed Shrew
- 2 Great Skua
- 15 Parasitic Guest Ant

## RAINBOW COLLECTION

- 1 Painted Wild Dog
- 16 Wild Card Winner
- 8 Himalayan Monal Nicobar Pigeon
- 9
- 5 Halloween Crab
- 12 Bornean Rainbow Toad
- 4 Marbled Polecat
- 13 Madagascan Sunset Moth
- 6 Peacock Mantis Shrimp
- 11 Mandarin Fish
- 3 Wolf's Mona Monkey
- 14 Flat Lizard
- 7 Golden Headed Lion Tamarin
- 10 Mottled Cup Moth
- 2 Red-shank'douc
- 15 Rainbow Scarab

**WILD CARD WINNER**  
1 POINT

**ROUND 1 WINNERS**  
1 POINT

**ROUND 2 WINNERS**  
2 POINTS

**ROUND 3 WINNERS**  
3 POINTS

**ROUND 4 WINNERS**  
5 POINTS

**ROUND 5 WINNERS**  
8 POINTS

**CHAMPION**  
13 POINTS

**ROUND 1 WINNERS**  
1 POINT

**ROUND 2 WINNERS**  
2 POINTS

**ROUND 3 WINNERS**  
3 POINTS

**ROUND 4 WINNERS**  
5 POINTS

**ROUND 5 WINNERS**  
8 POINTS

**TAKE A BOW**

- 1 Northern Elephant Seal
- 16 Asian Cornborer Moth
- 8 Opossum
- 9 Hognose Snake
- 5 Pronghorn
- 12 Wrinkle-faced Bat
- 4 Leatherback Sea Turtle
- 13 Singing mouse
- 6 Howler Monkey
- 11 Swamp Nightjar
- 3 Great White Shark
- 14 Elegant Dancing frog
- 7 Coral Snake
- 10 Flame Bowerbird
- 2 Forest Elephant
- 15 Honey Bee

**WILD CARD**  
1 Point / 1

**ROUND 1**  
1 Point Each / 32

**ROUND 2**  
2 Points Each / 32

**ROUND 3**  
3 Points Each / 24

**ROUND 4**  
5 Points Each / 20

**ROUND 5**  
8 Points Each / 16

**CHAMPION**  
13 Points / 13

**ROUND 1 WINNERS**  
1 POINT

**ROUND 2 WINNERS**  
2 POINTS

**ROUND 3 WINNERS**  
3 POINTS

**ROUND 4 WINNERS**  
5 POINTS

**ROUND 5 WINNERS**  
8 POINTS

**Total** / 138 max


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**MMM created and directed by**  
**Professor Katie Hinde, Arizona State University**



## RESEARCH THE COMBATANTS!

As we know, not all information on the World Wide Web is reliable. For this reason, the [March Mammal Madness LibGuide](#) provides links to freely available resources for learning about the 2024 combatants.

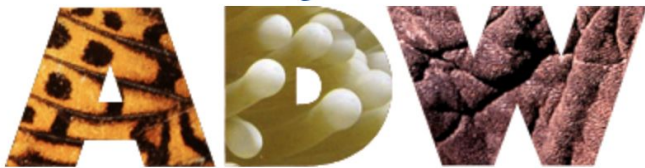


**ASU Library  
Library Guides**

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**March Mammal Madness**

### Animal Diversity Web



To reach resources for different tournament user groups, go to the player, learner, and educator portals. Within the learner portal, students have pages designed for their grade level.

## Choose your adventure!

You are a:

- College student
- High school student
- Middle school student
- Elementary school student



**THE IUCN RED LIST  
OF THREATENED SPECIES™**

AND our friends over at Oxford University Press have put together [a special collection of articles about the 2024 combatants!](#) OUP has made these collections freely available for MMM players each year since 2017.

Peruse numerous scholarly publications including the Journal of Mammalogy, Mammalian Species, Journal of Marine Science, Letters in Applied Microbiology, Annals of the Entomological Society of America, Journal of Crustacean Biology, Conservation Physiology, & the Auk.



OXFORD ACADEMIC Journals Books

**American Society of Mammalogists Journals**

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**March Mammal Madness 2024**



## RULES of the MMM GAME UNIVERSE:

☆ Combatants are arranged in a four division, single elimination tournament.

☆ Combatants have assigned seeds 1-16, with “1” being the best-ranked combatant and “16” being the worst-ranked combatant in the Division.

☆ A single individual at peak “combat” condition represents their species as combatant- for some species this may be a male or female, depending on the natural history.

☆ Keep season in mind- March is Spring in the Northern hemisphere & Autumn in the Southern hemisphere. Combatant condition & priorities may vary with season, depending on the natural history.

☆ The combatants are considered as encountering each other on a field of battle:

★ Rounds 1, 2, & 3 the better/lower seeded combatant has **Home Habitat Advantage**. The worse/higher-seeded combatant is the visitor, unless the combatants live in the same habitat.

★ Rounds 4, 5, & 6 (the Elite Trait, the Final Roar, & the Championship), the field of battle is randomized among 4 possible habitats.

**Pelagic Realm:** the open sea well beyond coastlines and stretches from the ocean surface to the ocean floor.

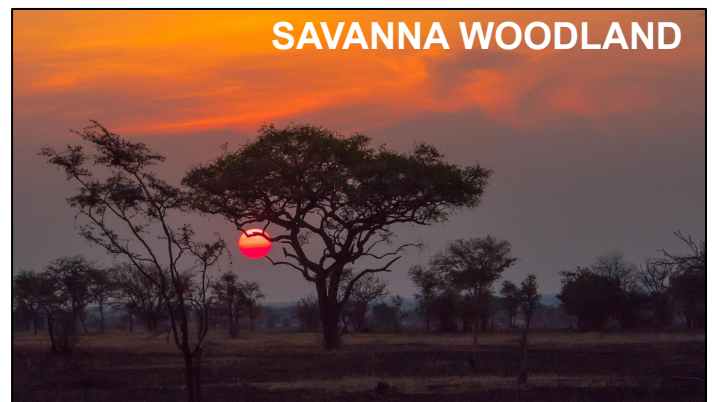
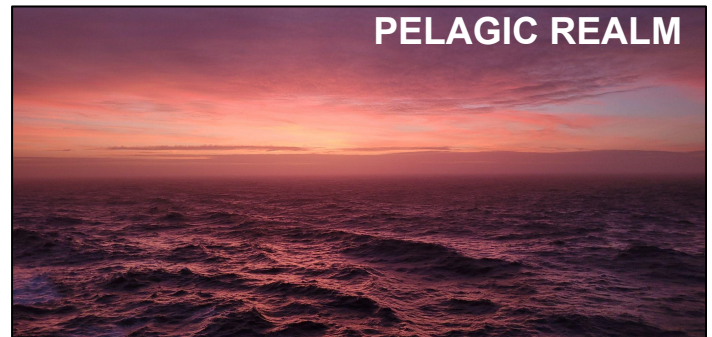
**Savanna Woodland:** An area of grassland under a light, patchy canopy of trees and shrubs.

**Peatlands:** a wetland ecosystem with incomplete decomposition of organic matter.

**Tidewater Glacier:** a glacier that reaches the ocean; icebergs calve from tidewater glaciers.

☆ To “win” a battle, a combatant has to be holding the field of battle at the end of the encounter. Withdrawing from the encounter, fleeing, or total knock out (carnage) count as a defeat.

## RANDOM HABITATS for 2024



Savanna Woodland photo by Anita Ritenour CC-BY 2.0; Tidewater Glacier photo by DCheretovich, public domain / Wikimedia Commons; pelagic realm & peatlands photos by K. Hinde

# SCIENCING MMM

## HOW BATTLE OUTCOMES ARE DETERMINED BY MMM:

🌍 A team of scientists research the combatants and their habitats and estimate probability that combatant A wins vs. combatant B wins within the specific habitat of the encounter.

🌍 Attributes considered in estimating battle outcome include weaponry, armor, body mass, speed, fight style, physiology, attitude **and motivation**.

🌍 From that probability estimation, a random number generator (RNG) determines the outcome of the encounter and which combatant advances in the tournament.

🌍 The use of the RNG allows for the possibility, if not the probability, of UPSETS (a worse ranked combatant defeating a better ranked combatant).

[Ring Nebula](#) M57 or NGC 6720. ESA/Webb, NASA, CSA, Barlow (UCL), Cox (ACRI-ST), R Wesson (Cardiff University)



Radio program put on by children of Junior Artists Club Federal Art Project WPA Phoenix AZ 1935; public domain, Wikimedia Commons

## HOW BATTLE OUTCOMES ARE REVEALED BY MMM:

🌍 Scientist-narrators write a “battle story” that explains the outcome using evidence from published research about the species and their environment.

🌍 The outcomes of the encounters between combatants are revealed as though being observed in real time by the scientist narrator, like an announcer at a sporting event calling the play-by-play.

🌍 March Mammal Madness does not “force” the combatants into a simulated fight. Many animals ignore, avoid, or tolerate one another in their natural ecosystems.

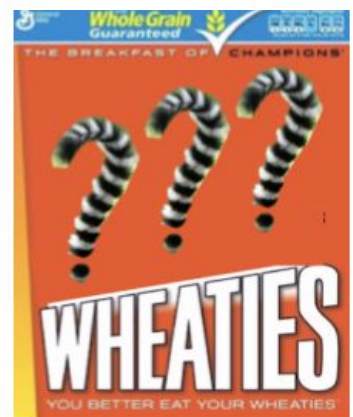
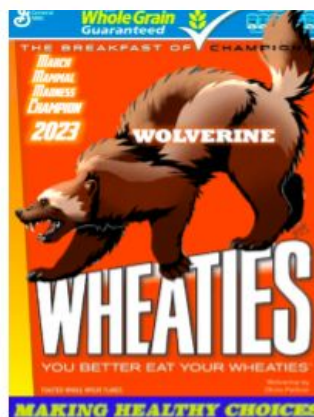
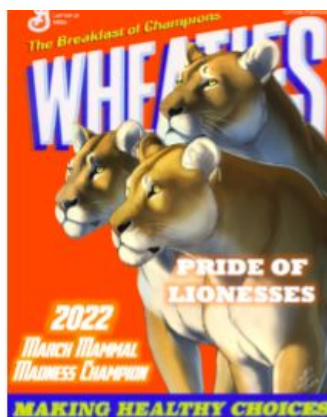
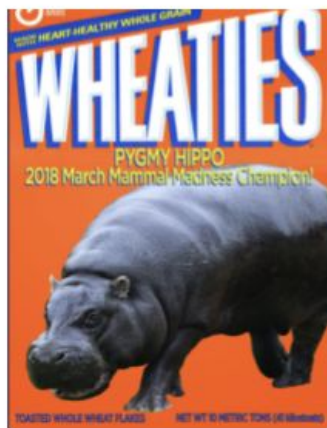
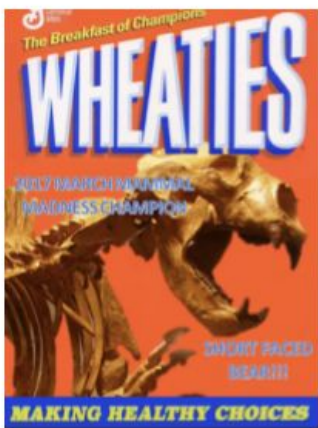
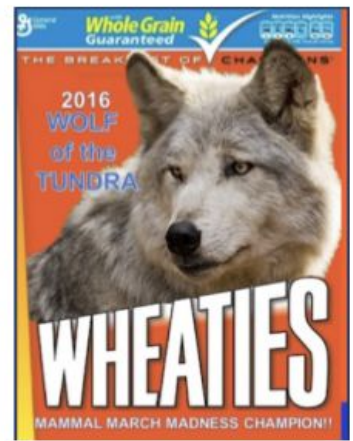
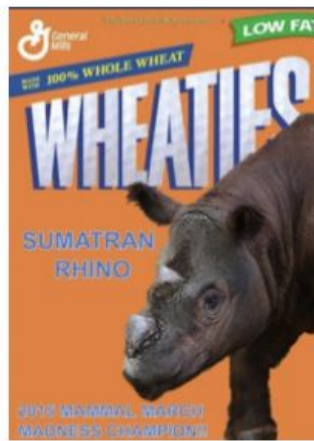
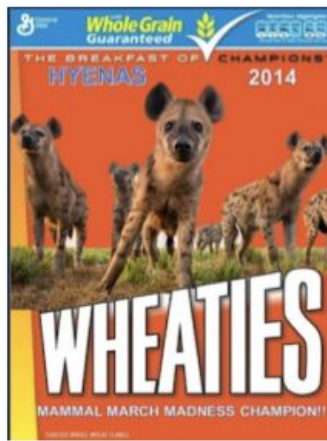
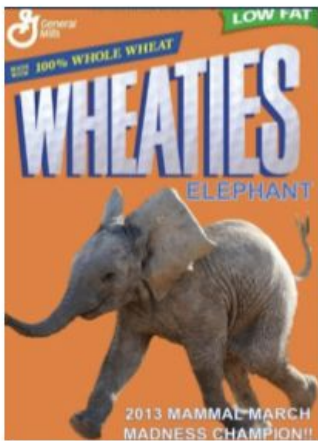
🌍 Fights can be risky: injuries, distractions, wasted energy. MMM showcases not only physical traits for “battle,” but also traits for motivation & behavior.

🌍 March Mammal Madness turns science into evidence-based story. Dramatic reveals, plot twists, and outside interference can be used to explain the outcomes of the combatant encounters.

# 2024 MAMMALS

Remember, March Mammal Madness features 65 species, but only one will be crowned 2024 Champion. Prepare yourselves for heartbreak, hilarity, and horror as fortunes and fates rise and fall, in a glorious narrative of science. The philosopher, and natural historian, Aristotle once

said "In all things of nature there is something of the marvelous." In coming weeks we will share in a journey across our world, and occasionally through time, in a celebration of animals, adaptations, ecosystems, and our community. If you're learning, you're winning! GAME ON!



# FOLLOWING MMM



A “**Live Event**” version of the battles will be performed on Twitter which can be viewed by following the account [@MMMIetsgo](#) or by following the hashtag #2024MMM. Twitter events begin at 8PM EDT and typically last 2 hours.

This will be the last year for March Mammal Madness on Twitter and we do not recommend players create an account to follow the tournament. We are not saying that Twitter is increasingly becoming a ghost forest from a catastrophic saltwater intrusion, but we’re not NOT saying that either. Obviously this analogy works perfectly because everyone remembers everything they learned about ghost forests when the random habitat kicked in for Wolverine vs. Penguin in the Elite Trait last year.

Moving on. If your first choice champion exits the tournament early, don’t despair! On March 25th, after the 2nd round battles are over, swing over to

**SO IT'S ROUND 2 AND YOUR BRACKET IS BUSTED?**



**JOIN THE BUSTED BRACKETEERS!**

the LibGuide and become a Busted Bracketeer! All you have to do is download a busted bracketeer bracket that starts with the Sweet 16 and make new predictions of the combatants that are still in it to win it! Make your new picks based on what you’ve learned about the combatants and the tournament in the first 2 rounds and you can keep cheering for your new chosen champion!

# LEARNING TOURNAMENT OUTCOMES



THE PLAY-BY-PLAY IS LIVE ON TWITTER OR A PDF AFTERWARDS



THAT'S TOO LONG



THE READ ALL ABOUT IT HAS SPORTS-STYLE SUMMARIES



I WANT A VIDEO



MC MARMOT VIDEOS POST THE NEXT MORNING

All tournament results are available through the [March Mammal Madness LibGuide results page](#). Players can choose the very detailed play-by-plays, the pamphlet read all about it, the brief highlights MC Marmot video, or just the winners from the updated bracket.

**PLAY-BY-PLAY:** Tournament tweets are combined into a PDF so that every aspect of the battle encounters, pomp & circumstance, artwork, genetics info, & inspirational intermission are archived as performed in the tournament. Available *typically* by 9PM Arizona time following an evening's battles at the LibGuide Results page (linked above).

**READ ALL ABOUT IT:** A pamphlet rundown of combatant info and a paragraph summary of the battle events for each battle. The Read All About pamphlet is provided with images & layout as a PDF, like the guide you are reading now. Text-only version for screen-readers & text-only will be transformed into Spanish using Google AI translation. Available *typically* by 9PM Arizona time following an evening's battles at the LibGuide Results page (linked above).

**VIDEO:** The morning after the battles, MC Marmot and the Roving Rodent Reporters rock the recaps in Sportscast-style puppeteering [on YouTube!](#) The videos are typically 5-10 minutes of each battle's highlights and appropriate for all ages.



# EDUCATOR RESOURCES

ALL March Mammal Madness brackets & materials are provided freely as an **OPEN EDUCATIONAL RESOURCE** including multiple Lesson Plans anchored to a STEAM (Science, Technology, Engineering, Arts, & Mathematics) approach and tailored to US Next Generation Standards for Life Science, Language Arts, and Social Studies.

Lesson Plans include teacher instructions, slide decks, and student worksheets. These lesson plans are designed to support content knowledge (such as animal traits, food chains) and skill learning (research, arguing from evidence, presenting).

## Life Sciences Lesson Plans

Pre-Tournament Combatant Research\*  
Tournament Outcomes Worksheets\*

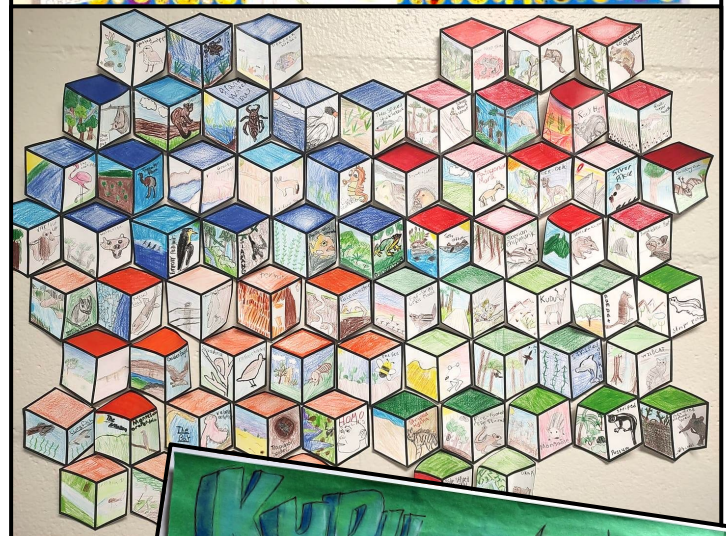
## STEAM & Humanities Lesson Plans

K-12 Visual Arts Tumbling Blocks\*  
K-12 Combatant Hype Poster\*  
K-12 Language Arts HAIKU\*  
Science Writing – The Championship Battle that SHOULD HAVE BEEN\*  
4th Grade Every Kid Outdoors  
Science & Writing

\*Also available in Spanish

**NEW for 2024:** The Haiku lesson plan has been expanded to now include worksheets and can be used by Science educators as a brief lesson during combatant research or in an expanded form by ELA/Humanities educators over multiple rounds of the tournament.

STEAM work by students,  
shared by their teachers



# MOAR RESOURCES!

Introduced in 2021, the **Combatant Info Slides** provide key info to help young learners, special education learners, and learners with limited access to the internet. The teaMMM created these in response to feedback from the general public via social media and via the educator survey. Available in English & Spanish.

1

## Okapi

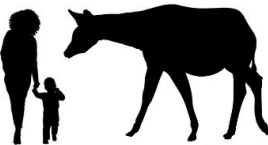

*(Okapi johnstoni)*

**TRAITS:** Oily coat to wick away moisture from the rainforest. Solitary. Have many vocalizations. Wide home ranges.

**BIOME:** Tropical Rainforest

**HERBIVORE:** Leaves, roots, tubers, wood, bark and stems

**POSITION IN FOOD CHAIN:** Primary Consumer



Info Sourced from [Animal Diversity Web](#); Okapi silhouette sourced from [PhylPic.org](#) by T. Michael Keesey human silhouette(s) clipart purchased via etsy, photo Rtau18941 from [Wikimedia Commons](#)

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The slides provide key info:

- Common Name & Scientific Name
- Key Physical & Behavioral Traits
- Diet/Nutrition
- Position in Food Chain
- Source of Info
- Photograph of the Animal
- Silhouette of the Animal compared to adults & kids!

**NEW for 2024:** There are Template Slide Decks now in English and Spanish that have common name, Latin binomial, image, & silhouettes. The students can be assigned research on traits, biome, diet, and position in the food chain.

Most combatant species have entries in the Animal Diversity Web, but some do not. [This spreadsheet](#) gives guidance for best sources of info for research.

Several 2024 Combatants are not well known in public materials, so do not assign these animals to students: Wichita Mountains Pillsnail • Tufted Ground Squirrel • Mottled Cup Moth caterpillar • Coral Snake • Schizomid • Catfish

## EDUCATOR HUB

Since 2021, March Mammal Madness has provided infrastructure for a **crowd-sourced database** for educators to link and share MMM resources they have created for use with their learners. In 2023, educators shared >75 resources they had created, including

- Assignments
- Aniwordle Game
- Auto-Scoring Brackets
- Vocabulary EduProtocols
- Quizzes
- Games
- Poster Board Labels
- Combatant Collector Trading Card Game
- Notetaking Worksheet to Fill Out while watching the MMM “How to Play” video
- Templates for Student Research

The [form to submit links to 2024 materials](#) is open at the LibGuide. Once educators begin submitting materials we will publish the spreadsheet link at the LibGuide



# LIBGUIDE EDUCATOR HUB

The [LibGuide Educator Hub](#) has many, many, many resources for you to use MMM with your learners. But it can be overwhelming.

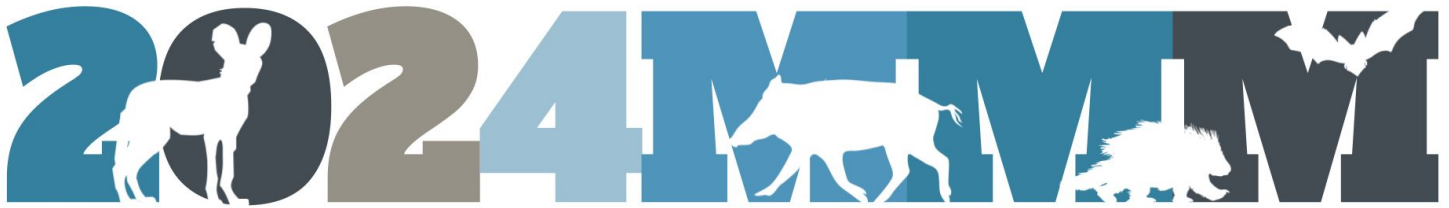
## PRO-TIPS:

- Review the resources provided
- To get **editable versions** of the lesson plans, worksheets, slides, etc. In Google drive go to FILE & MAKE A COPY or DOWNLOAD. Please do not ask for editing permission, as we can not allow the 6000+ educators signed up for MMM to have editing access to the main documents.
- **Manage Emotions:** 64 combatants WON'T be the Champion. Some students become very emotionally invested in their bracket and find the brief highlights from MC Marmot less convincing when their pick is defeated. Please direct these students to the Read ALL About It to learn more of the science that explains the battle outcome.
- Please **grade on their research, arguing from evidence** for their bracket picks. Please do not have their grade be about their bracket score- there will be upsets in the tournament, the bracket is designed for learning about really cool organisms & ecosystems.
- **For K-5**, students may find it better to work in groups on research, make predictions through Round 1 & 2, and then have a "redo" bracket starting in the Sweet 16 since younger kids sometimes go for cute over fierce.
- We do not encourage students to join Twitter to follow the Tournament. The Tournament Events lesson plan can be completed using the READ ALL ABOUT IT or PLAY-by-PLAYs



For **First Time Users of MMM** at Middle School and above, we recommend

- 1) distribute the bracket, show the MMM trailer & Introduction to MMM slides
- 2) assign students the Life Sciences pre-tournament combatant research lesson plan.
- 3) students present their research to their classmates (poster session, slide presentation, deliver a "speech")
- 4) students complete their bracket all the way to Champion with guesses informed by their own and shared research
- 5) Educators can show MC Marmot videos or read summaries so students know the outcomes.
- 6) Learning = Winning & HAVE FUN!



March 11, 2024

If you're learning, you're winning!

Since 2013



Image modified from United States Navy & Aberdeen Bestiary via Wikimedia Commons / Public Domain

**2024 WILD CARD NIGHT!** For over a decade we have been delving into the natural history and science of animal encounters, turning scholarly science into riveting stories. In coming weeks we will share in a journey across our world, and occasionally through time, in a celebration of animals, adaptations, ecosystems, and our coMMMunity.

You've researched the combatants, you've considered the habitats, made your picks, and now we are on the road to the Championship! March Mammal Madness features 65 species, but only one will triumph above the rest. Prepare yourselves for heartbreak, hilarity, and horror as fortunes and fates rise and fall, in glorious narratives of science. The tournament will bring you obscure science, cliffhangers, carnage, non-player characters, & SO MUCH MORE!

This Issue: ♥ Sciening MMM  
♥ Tournament Jokes ♥ Player Reach  
♥ Wild Card Battle Information

Remember, March Mammal Madness simulations do not force the animals to BATTLE like Gladiators, but rather we contrive encounters where the animals arrive with their physical and *behavioral* traits. And those behavioral traits include adaptations to AVOID combat.

Fighting is RISKY for animals. Fights can cause immediate death, slow death from infection or starvation (if an injury interferes with hunting, foraging, or chewing). The more closely matched combatants are, the greater their risk of losing. Even the winner can be injured. Animals have adaptations to choose their battles wisely (Dröge et al 2017; Stankowich & Blumstein 2005).

AND everything takes energy— chasing prey, running away from predators, battling competitors— sometimes A LOT OF ENERGY! And yes, for herbivores energy grows on trees, BUT the time for chewing & enzymes for digesting are finite. Also tooth enamel wears down.

Across many animal species, natural selection has favored animals whose traits enable them to smartly respond to the situation- with minds to weigh risks, benefits, & costs of a conflict,



# NOT THUNDERDOME

contest, challenge, or danger. Even most animals with spectacular weaponry will signal “You don’t want to mess with this” hoping the challenger or threat will back down before it gets to a fight (Palaoro & Peixoto 2021).

Natural selection has favored awesome adaptations for those who fight, flee, hide, peek, retreat, & sneak away to live another day (aka survive long enough to achieve reproductive success & thereby contribute traits to subsequent generations, iteratively over evolutionary timescales). Or in a well known idiom: *discretion is the better part of valor*; which Merriam-Webster dictionary describes as “better to be careful than to do something that is dangerous and unnecessary.”

Sometimes, rarely, a much less likely combatant triumphs. This is why we write battles with unexpected, evidence-grounded plot twists. This is part of the suspense, surprise, and collective experience of March Mammal Madness.

So BUCKLE UP BUTTERCUPS, this is March Mammal Madness! Sometimes it's CARNAGE, sometimes it's BASIC, sometimes it's UPSET CITY where the **wrasse is green** and the **gulls are gritty**... But always, as we sleuth the B-sides & dusty deep tracks of natural history, March Mammal Madness is here, from tangled bank to misty mountains to salty shore, to trip the LIFE fantastic through the splendor of our natural world. **If you're learning, you're winning!**



Jean-Leon Gerome “Pollice Verso” (Thumbs Down) 1872 / Wikimedia Commons / Public Domain





## SCIENCING MMM CITATIONS:

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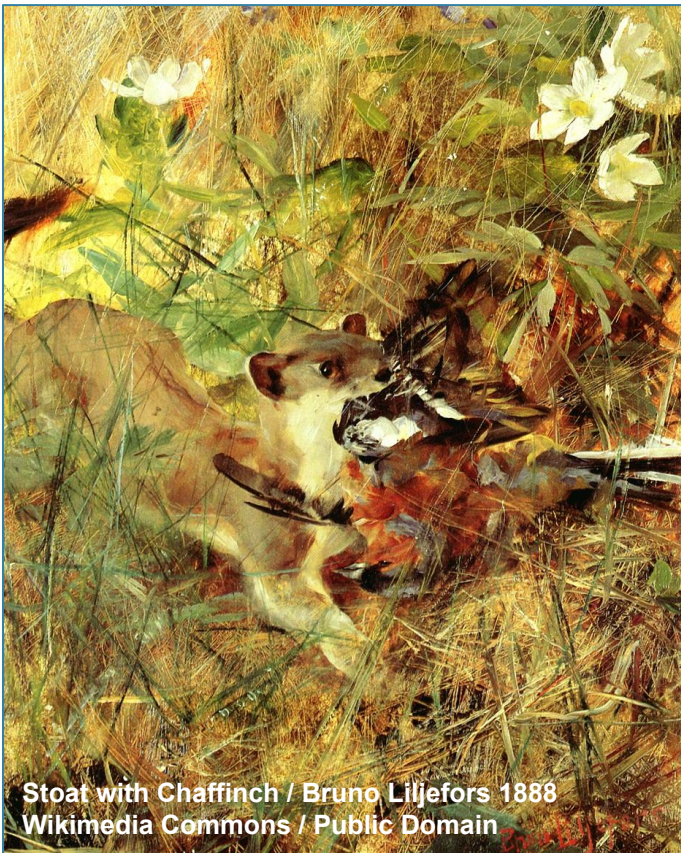
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Stoat with Chaffinch / Bruno Liljefors 1888  
Wikimedia Commons / Public Domain

## COMMON TOURNAMENT JOKES

♥ **STOAT STATS** In 2016, Dr. Kristi Lewton narrated a battle between two mustelids (wolverine & stoat). To show the relative weight difference, she said 1 Wolverine = 67 stoats. Several nights later, Kristi reported that stoat conversions were in the scholarly literature since at least 1866, when natural historian George Allman described an otter shrew as “somewhat larger than a stoat” in the *Transactions of the Zoological Society of London*. Since then, the coMMMunity finds new and hilarious ways to convert measurements into units of stoat #StoatsAsMeasurement. See @stoatamatic

♥ **FIGS** In 2017, a battle encounter between spider monkey and binturong involved figs and accusations of narrative discrepancies of who first departed the field of battle. The controversy, dubbed “FIG-gate,” led to the first ever emergency MMM press conference. Since that time, figs are a delicious, nutritious sore spot of hilarity.

♥ **DURGAVITCHED** Since Dr. Lara Durgavich narrated octopus dissolving from lack of salinity when transported to a freshwater environment in 2018, particularly catastrophic and ignoble deaths are considered to be “Durgavitched.”

♥ **CARNAGE** Many battle encounters conclude with scientifically-accurate, seemingly undramatic withdrawals. Bloodthirsty players bemoan such outcomes, demanding carnage... until they get gruesome carnage and then switch to wails of “Not like this.” Botanists also mourn the rampant #PlantCarnage by herbivores.

### ♥ **INCIDENTAL ORCA / MUSTELID / ?**

Sometimes a non-combatant character makes repeated appearances in different battles during the tournament.

# TOURNAMENT ACTION





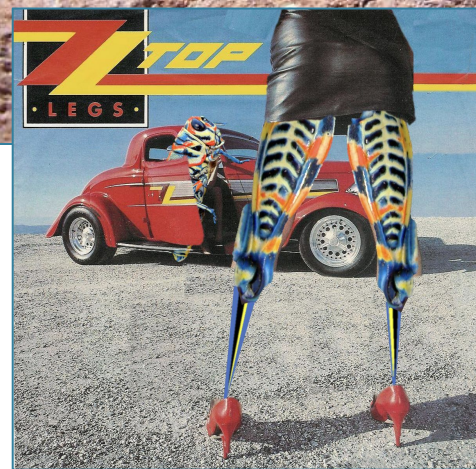
The play-in battle for the 2024 tournament is **Sparklemuffin Peacock Spider** vs. **Rainbow Grasshopper!**

First described to science & quickly nicknamed Sparklemuffin, *Maratus jacatatus* is one of dozens of jumping peacock spider species from Australia. Sparklemuffin spiders are teeny tiny, the male's body length is ~4.6mm (0.2 inches). Male jumping peacock spiders have very colorful back-halves (**opisthosoma**) & perform elaborate courtship dances. Sparklemuffin males have side flaps they lift to appear rounder. Sparklemuffin's scientific name "*jactatus*" is Latin for rocking and refers to his motion during his dance.



Rainbow Grasshoppers (*Dactylotum bicolor*) are flightless insects with multi-colored banding of reddish-orange, yellow/white, & blue/black body.

The largest rainbow grasshoppers get to be ~1.4 inches, 8x bigger than Sparklemuffin. Female Rainbow Grasshoppers weigh just under a gram, but females weigh 2.5x as much as males. Females have longer legs too.



Modified cover art from ZZ Top's 12 inch single release of "Legs" from their 1983 album Eliminator.

Competition between cattle & mammalian herbivores like deer & rabbits are often discussed, but grasshoppers are also an important herbivore in grasslands, especially in the semi-arid southwest where birds rely on grasshoppers in the food web. BUT Rainbow Grasshopper coloration is advertisement that they taste bad (**aposematism**) making them impervious to predation from birds. Whiptail lizards are also less likely to hunt Rainbow Grasshoppers.

# Wild Card CONTINUED

Tonight's battle location is determined by coin flip... & will be in Sparklemuffin's home habitat of Wondul Range National Park in Southern Queensland, Australia. The Bigambul people are the traditional stewards of the land; brush-tailed rock-wallaby live nearby.

Sparklemuffin Peacock spider is on the hunt in the leaf litter. Meanwhile in Southeastern Arizona, carefully hidden from predators in sand, the rainbow grasshopper finds itself MMMagically transported from the semi-arid grasslands of the Appleton-Whittell Research Ranch of the National Audobon Society. In the new landscape, Rainbow grasshopper is motionless.

BECAUSE RAINBOW GRASSHOPPER IS STILL AN EGG!!! Rainbow grasshoppers do not hatch until June & July. Late last summer, Rainbow Grasshopper's mum carefully dug down into sand beneath the scrub-brush to safely lay her egg pod beyond the reach of spiders, assassin bugs, and other predators. Now the Rainbow Grasshopper egg is vulnerable out in the open, but the teensy Sparklemuffin Peacock Spider is not interested in the relatively large egg...

Sparklemuffin Peacock Spider has seen a brown & grey female! Sparklemuffin begins his elaborate fan dance to entice her to be his mate! Sparklemuffin Peacock Spider dramatically rocks his iridescent blue and orange backend, sparkling in the sunlight, as he rapid fire kicks up his extra long leg on each side.

Leaping onto the Rainbow Grasshopper Egg as a little stage, Sparklemuffin Peacock Spider performs some elaborate dance moves! (with apologies to V.I.C)

'Flap it out, kick leg up (let me see you just),  
Rock it now, rock it now (let me see you just)  
WOBBLE BABY, WOBBLE BABY  
WOBBLE BABY, WOBBLE (yeah!)

OH NO! A meat ant (*Iridomyrmex purpureus*), 50% bigger than Sparklemuffin, is aggressively closing in!!



patrickkavanagh / Wikimedia Commons / CC BY 2.0

Sparklemuffin jumps onto a rotting log just as the meat ant's pinchers plunge into the Rainbow Grasshopper egg. Sparklemuffin watches as the



Otto & Hill 2015

meat ant drags the Rainbow Grasshopper egg, rich in protein & fat, back to the communal nest so other ants & larva can feast!

**SPARKLEMUFFIN  
OUTLASTS  
GRASSHOPPER!**

Sparklemuffin becomes the 16th seed in the Rainbow Collection Division. Narration by Prof. Katie Hinde.





**Jessica Popescu**

@JessPopescu

### #2024MMM WILDCARD EMOJI BATTLE

🌟 vs. 🐛:



5:39 PM · Mar 11, 2024 · 243 Views

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One upshot of the continued [heat death of the Twitterverse](#), the Art TeaMMM's combatant artwork will be included as a gallery in the RAAI. Thank you Charon Henning, Mary Casillas Freisner, Olivia Pelicer, & Valeria Pelicer for your incredible contributions to MMM!



Valeria Pelicer!

@VPellicerArt!

[ko-fi.com/veppart](https://ko-fi.com/veppart)

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Mary Casillas Freisner!

@MaryCCasillas

[ko-fi.com/marycasillas](https://ko-fi.com/marycasillas)

[marycasillas.wix.com/paintings](https://marycasillas.wix.com/paintings)

MMM Art Director

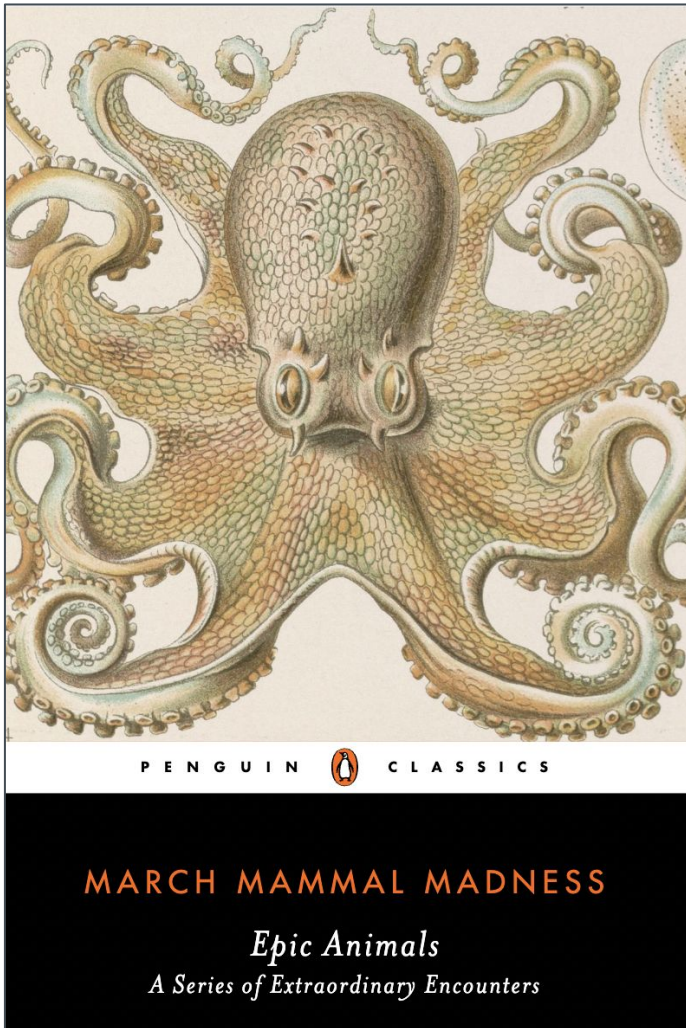
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[www.charonhenning.com](https://www.charonhenning.com)





**Sperm Whale (1) vs. Whip Scorpion (16)** – Sperm Whale (*Physeter macrocephalus*), the largest of the toothed whales, is physically huge—55 tons (50,000kg or 227,273 stoats) and literarily huge as Captain Ahab's mortal enemy in Herman Melville's 1851 novel *Moby Dick*. Sperm whale is named from a case of mistaken identity. The Sperm Whale's massive head contains the spermaceti organ, which does not make male reproductive cells (**gametes**), but instead an oil that humans used in lamps, candles, and lubricants. Whip Scorpion (*Draculoides bramstokeri*) and other schizomids are closely related to spiders with two body segments (**tagmata**) and jointed appendages for walking, grasping, and eating. Their unique tail is called a flagellum and used during courtship. Whip Scorpion's scientific name is a nod to Irish author Bram Stoker and his 1897 novel *Dracula*, chosen by arachnid expert Dr. Mark Harvey and subterranean biologist Dr. Bill Humphreys at the Western Australian Museum. The name is an allusion for Whip Scorpion's lethal approach to killing and consuming prey.

Humans are story-tellers and story-listeners. Animals feature prominently throughout oral tradition, folklore, and mythology. From the most ancient recorded epics to more recent literary masterpieces are tales of adventure and animal encounters. Some especially notable species appear again and again across time, geography, and culture. Some animals are named for works of words, from novels to poem to song to screenplays. We honor such species in our **EPIC ANIMALS DIVISION**. Tonight is Round 1!



Gabriel Barathieu / Wikimedia Commons / CC BY-SA 2.0 Generic

# R1: EPIC ANIMALS



Fig.1. *Draculoides bramstokeri* Harvey & Humphreys from Barrow Island. (Harvey et al. 2011)

Sperm Whale swims his preferred habitat of "the open sea" throughout the world's oceans in temperate and tropical areas... Tonight's Battle takes place \*pause as narrator spins a globe & randomly places finger on it\*... in the Northern Atlantic Ocean. Sperm whale returns to the surface after nearly a 40-minute foraging dive 1000m below the surface, to briefly fill up on oxygen before returning to the hunt. The MMMagically transported Whip Scorpion suddenly finds itself on top of Sperm Whale's head. This seascape is dramatically different from the underground cave systems on Barrow Island, Western Australia that our schizomid calls home (**troglobitic**). The small arachnid scuttles across the slippery surface, searching for any crack or crevice to escape into... it finds a dark, smelly tunnel... WHOOSH!!!! Sperm Whale exhales a huge breath and water vapor out of its blowhole launching Whip Scorpion into the misty air... and off the Field of Battle! Whip Scorpion splashes into the water and drifts down to Davy Jones's locker. SPERM WHALE THAR HE BLOWS WHIP SCORPION!!! Narrated by Prof. Patrice K. Connors.

**Giant Squid (2) vs. Tarzan Chameleon (15)** – The elusive, mysterious Giant squid (*Architeuthis dux*) is among the largest living invertebrates with enormous eyes, to see better in the deep sea. Their stomach contents reveal that Giant Squid eat a smackerel of mackerel, munch on mora, and hunt many other squid species. These squid may be the source material for legends of the Kraken, a large sea monster. In '20,000 Leagues Under the Sea' by Jules Verne, a humongous squid-like monster attacks the crew of the Nautilus submarine.

Tarzan Chameleon (*Calumma tarzan*) is a medium-sized green lizard that lives in rainforest fragments of central eastern Madagascar. From their teensy bit of extra snoot to the tip of the tail they can reach nearly 6 inches, ~119–150 mm. The species is named for Burroughs fictional man of the forest, as "a Tarzan yell for conservation" to increase protection activities for not only the rare chameleon but the other species in the Madagascan ecosystem threatened by habitat destruction (Gehring et al 2010).



Sebastian Gehring / Wikimedia Commons  
CC BY-SA 3.0 Unported

# R1: EPIC ANIMALS

Our battle begins 300 fathoms below the ocean's surface (550 meters, ~1600 stoats!) where a one ton Giant Squid hunts off-shore of the Azores. But he is not the APEX predator of this realm, so he swims vigilantly as both hunter and hunted!

About 6000 miles away, Tarzan Chameleon sits in ambush in the Anosibe An'Ala region of Madagascar. Body motionless, tongue spring-loaded to accelerate from 0 to 50+ miles per hour in one hundredth of a second, Chameleon awaits an insect to arrive in reach. Meanwhile, in the dark, deep waters, Giant Squid searches for his next meal. Tarzan Chameleon rotates his eyes for panoramic vision, his small forest fragment means few potential mates and he is often on the lookout for a lady. The MMMagic Transportal opens beside him... staring through the portal into the abyss, Tarzan Chameleon takes a hurky, jerky step with his grasping feet toward the dark...

CRRRAAACK!!!! The air is aflutter with thousands of insects sent flying from trees falling, as loggers' chainsaws fell forest trees into timber! Tarzan Chameleon's tongue rapid fire captures a flying insect just as the limb beneath him collapses away!!! The adjacent tree's fall demolishes Tarzan Chameleon's tree and he plummets away from the MMMagic Transportal, tiny green legs flailing for a vine to grab. But all of the forest fragment has fallen... and so does Tarzan Chameleon! GIANT SQUID OUTLASTS TARZAN CHAMELEON!! Narrated by Profs. Marc Kissel and Katie Hinde

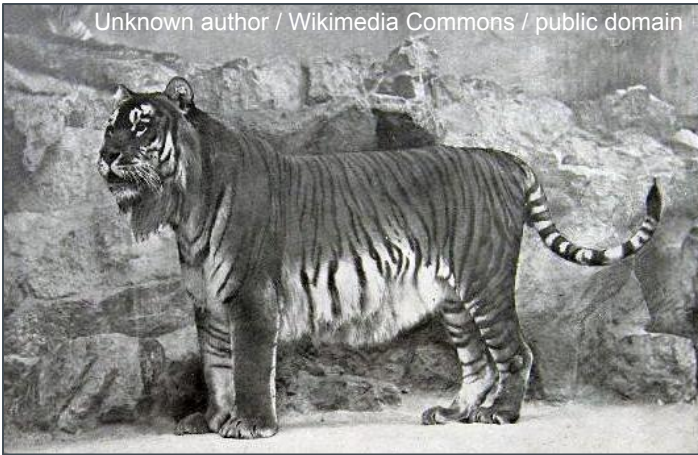
**Caspian Tiger (3) vs. Suckermouth Armored Catfish (14)** – *Peckoltia greedoi* was discovered in 1998 in the Gurupi River in Brazil & described by #ActualLivingScientists in Armbruster's lab, Auburn University who named it after Greedo, the bounty hunter from Star Wars, because of a shared resemblance. What the *Peckoltia greedoi* catfish lacks in stature (up to 78 mm / 3.1 inches / 0.23 stoats), it makes up for with its dark eyes, teeth (36-77), and large sucker mouth. That mouth makes up about 50% of its head!



Jonathan W. Armbruster / Wikimedia Commons / CC BY 4.0 Int'l

Once the most widely distributed tiger subspecies, the now extinct Caspian Tiger ranged from Turkey through Central Asia into northwest China. The Soviet Union placed bounties on the Caspian Tiger and that brought out the bounty hunters. Caspian male tigers stacked in at 170-240 kg (370-530 lbs) and 270-295 cm (106-116 in), and have fierce claws (80-100 mm) and upper canine teeth (~78 mm in similar subspecies). AKA Tiger's canines are the size of Suckermouth Armored Catfish. In the oldest forms of Sanskrit poetry and prose, the concept 'mrga' was specific to "wild animals, namely a tiger (vyāghra), called the foremost among the wild creatures" (Sojkova 2022).

# R1: EPIC ANIMALS



Unknown author / Wikimedia Commons / public domain

MMMagic transports Catfish several hundred years into the past to the muddy banks of the riparian forest area between the Vakhsh and Panj Rivers in Tajikistan where Caspian tigers once ranged. Today this is called the Tigrova Balka Nature Reserve. Tiger recently gorged and strolls to the river bank to drink water and cool his "meat sweats." Digestion takes energy, and burning energy to digest energy can slightly increase core body temperature. MMMagic translocation has taken the bottom-feeding Suckermouth Catfish from the river in Brazil to Tajikistan, but the Catfish remains at the silty bottom, hoovering up delectable detritus and algae as its meal. Wading near a tangled bank, Caspian Tiger steps on Suckermouth Armored Catfish! Squishing out between tigers toes, Suckermouth Armored Catfish swim darts across the river and off the Field of Battle! CASPIAN TIGER DEFEATS SUCKERMOUTH ARMOURED CATFISH!! #CatfishShotFirst Narrated by Profs. Chloe Josefson and Katie Hinde.

**Wolf (4) vs. Eurasian Harvest Mouse (13)** - Several hundred years ago, wolves (*Canis lupus lupus*) were "the most widespread large terrestrial carnivores in the northern hemisphere" but centuries of intensive hunting campaigns killed out (**extirpated**) entire populations in Western & Central Europe (Szewczyk et al. 2019). Wolves are in folklore widely: British Isles to Scandinavia, Turkiye, Russia, India, and across the Himalayas into Mongolia. Wolves are variously presented as dangerous, cunning, courageous; sometimes evil & sometimes divine.



Clément Bardot / Wikimedia Commons / CC BY-SA 4.0 Int'l

Harvest Mouse (*Micromys minutus*) is a very small rodent with brown fur on back and face, with a white fur belly. Widely distributed across Eurasia, the Harvest Mouse appears in stories and myths

# R1: EPIC ANIMALS

across many cultures, including the tales of Beatrix Potter. Harvest mice eat seeds all year, but in summer Harvest Mouse can become a hunter, opportunistically eating grasshoppers and caterpillars. Harvest mice are also adept climbers with grasping, opposable big toes.



Tonight's Battle occurs in the Białowieża National Park of Poland where both combatants are found. Here in the Białowieża Primeval Forest, wolves were never fully extirpated, and throughout central Europe, wolf populations are recovering. The little Harvest Mouse searches for scarce seeds in springtime. Born last autumn, this fellow is one of

the few Harvest mice to survive the winter and reach the ripe old age of 7 months in the wild. Not being able to hibernate and skittering about on top of the snow exposes the Harvest Mouse to owls and other predators, but the spring thaw has begun. Harvest Mouse scampers through a muddy depression to a clump of dead grass and finds a seed! In the distance a wolf howls. Harvest Mouse's advanced age has worn down his teeth so he sits carefully chewing.

A TWIG SNAPS! A wolf stands behind the Harvest Mouse. Harvest Mouse is still, not even his whiskers twitch. A distant howl announces that a packmate has scented a roe deer and is calling wolves to the hunt. Listening intently to the howl, the Wolf steps over the Harvest Mouse, not even aware the rodent is just beneath him. Wolf takes one more step, tensing his muscles, about to lunge over to his pack for the hunt... Harvest Mouse sprints off into the underbrush, scrambling deep up into the shrubbery with his grasping feet and semi-grasping tail beyond the Field of Battle! WOLF OUTLASTS HARVEST MOUSE! Narrated by Katie Hinde.

**Stag (5) vs. European Starling (12)** – The European Starling (*Sturnus vulgaris*) are descendants of dinosaurs and can be found on six continents, although not originally native to all these continents. Starlings are small in stature (3.5oz, 100g, less than half a stoat) with brilliant, iridescent plumage. Mentioned in plays by

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William Shakespeare, Starlings were introduced to the US by Eugene Schieffelin in 1890... At least we thought so until researchers went digging for the bird's origin story in North America, but turns out this was a complete myth. Starlings were introduced numerous times in various states as early as the 1870s. [Jason Bittel](#), covered the [Starlings and Shakespeare story in 2022](#).



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From the deer family in the mammalian order Artiodactyla, the Stag (*Cervus elaphus*) is best described as classical, both physically and in literature as far back as Ancient Rome and Greece. Also called red deer or elk in their native European range, Stags max out at 500kg (1100 lbs, 2273 stoats) and sport massive antlers that can reach 1.5m wide (5ft, almost 4.5 stoats) in the autumn.

Our combatants are sympatric with each other, so there is no home habitat advantage for the better-seeded Stag. Tonight the combatants will meet in New Forest National Park, one of Britain's 15 national parks that protects and manages ancient forests, coastlines, and heathland. We find both

combatants foraging. Stags switch between browsing on leaves and grazing on grasses to balance his nutrient needs. In the forest, Stag focuses on leaves, while the Starling rummages through low vegetation for insects. At least the Starling would have if there were enough food for everyone! Birds are impacted by deer overpopulation in forested habitats because heavy foraging by the deer reduces the amount and quality of forest habitat close to the ground for insects. <cough, bring back wolves, cough> Not finding dinner in this part of the forest, the Starling alights in the wind to hunt away from the Stag. STAG DISPLACES EUROPEAN STARLING!!!! Narrated by Patrice K. Connors.



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**Lucy (7) vs. Bigeye Houndshark (10)** – Lucy (*Australopithecus afarensis*) probably stood ~105 centimeters tall and weighed 29 kg. She is more closely related to living humans than to any other

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living primate, putting her in the group known as hominins. After scientists discovered her fossil in 1974, a spontaneous party ensued. The Beatles "Lucy in the Sky with Diamonds" played & team member Pamela Alderman suggested they name the fossil "Lucy." She's also known as Dinknesh, an Amharic name for "you are marvelous." At the time of Lucy's discovery, she was the oldest fossil evidence for walking upright in hominins. Fossil bone details of the big toe, knee, and hips don't lie... about how a primate locomotes. This year we are celebrating the 50th anniversary of her discovery! In the coming months, there is an [incredible line-up of free online talks](#) about the landscape, ecosystems, and behaviors of Lucy and her kin put together by the Institute of Human Origins at Arizona State University.

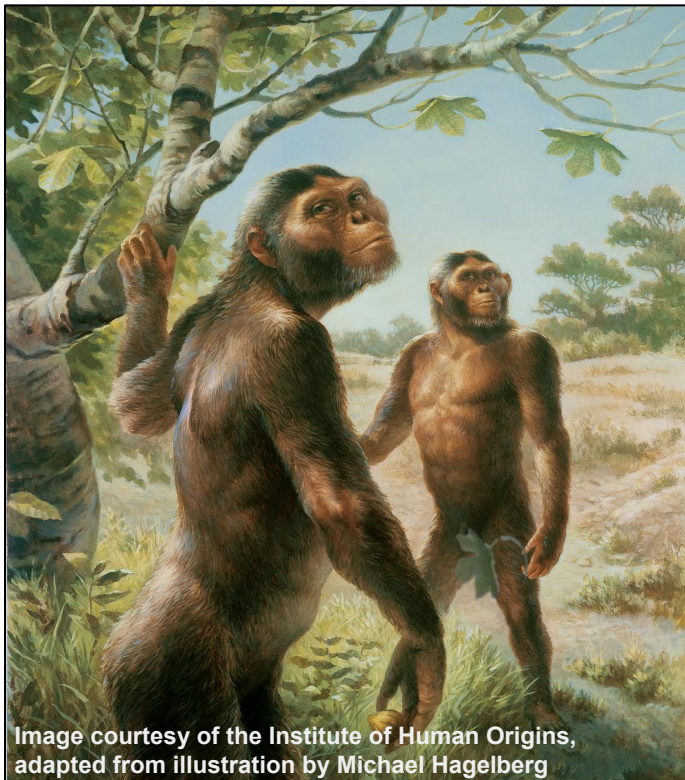


Image courtesy of the Institute of Human Origins, adapted from illustration by Michael Hagelberg



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Bigeye Houndshark (*Iago omanensis*) is a deep-water shark that feeds on fish and crustaceans. It lives in the waters of the Red Sea and along the coast of Oman. Females can be 80 cm, while males tend to be half that size. Although the Bigeye Houndshark is not considered threatened, "the deep ocean is the last natural biodiversity refuge" and fishing for oil and meat is driving deepwater sharks and rays toward extinction (Finucci et al. 2024). Houndsharks gets the genus name from the bad guy from Shakespeare's Othello, as the genus had been "a troublemaker for systematists and hence a kind of villain" (Compagno and Springer 1971).

The combatants meet in what is today the Afar region of Ethiopia, but 3.2 million years ago (or 640,000 stoat lifespans) inland from the Red Sea. Lucy is foraging in the shade of scrappy trees along a slow-flowing seasonal river. Gazelle, antelope, wildebeest, hippo, and Sivatherium (an extinct genus of giraffe!) graze the mixed savanna woodland. Houndshark has been MMMagically translocated across time and space to the seasonal river. The freshwater is not the saltwater she is adapted for, and the water is warm, too warm, for the Bigeye Houndshark that prefers to swim in cooler deep water. Lucy had a wide-ranging

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omnivorous diet, foraging mostly for fruits, leaves, and plant matter and opportunities for meat, such as eggs, grubs, small vertebrates. At times Lucy would have scavenged meat and bone marrow broken into by hitting bone with a rock. Bigeye Houndshark settles onto the riverbed near the bank where sparse trees give small shade. Underneath Houndshark, river rocks allow her to scrape off her skin parasites. The parasites, also unthrilled in the freshwater, become more easily dislodged. Lucy scans the landscape for predators, well aware of nearby trees as a possible escape route. Foraging in daytime can be thirsty work and Lucy approaches the water for a drink. Lucy, eyes up, scans the LANDscape for danger, as she lowers her hand into the river to scoop up water, not aware of the Houndshark resting below. Bigeye Houndshark, startled by the hominin hand, bursts from her resting spot to swim further into the river, letting the current carry her into deeper, cooler waters downstream. LUCY OUTLASTS HOUNDSHARK! Narrated by Profs Marc Kissel and Katie Hinde.

## Common Raven (8) vs. Wandering Albatross (9)

– Common Raven (*Corvus corax*), largest of the perching birds (passerine), can have a nearly 5-foot wingspan and is found across the Northern Hemisphere. Often mistaken for the much smaller crow, ravens have thicker, curvier beaks, a wedge-shaped tail and beard-like throat feathers (hackles). Ravens feature widely in folklore across the Northern Hemisphere and prominently in sacred texts of Muslim, Jewish, & Christian faiths.

religions. The Raven brought light to the Inuit and two Ravens were the ‘eyes and ears’ of Odin. The Raven's often supernatural role in the realms of life and death reflect their scavenging activities in nature.



Wandering albatross (*Diomedea exulans*), the largest seabird, are widely distributed across the open ocean of the Southern Hemisphere, returning to land for the breeding and nesting season. Historically, sailors had many superstitions about albatrosses, as both spend long periods at sea, most famously evoked in "The Rime of the Ancient Mariner." As the birds mature, their plumage becomes more and more white, with some males becoming all white. Males have larger wingspan (10 feet) and are ~20% heavier than females. Males have a larger crop to bring back more food for chicks. Males will forage for chicks on shorter, more frequent hunting trips, providing 60% of food intake for chicks. Albatrosses are long-lived (up to 60 years), slowly develop (adult at 10 years), and breed every other year. Albatross populations are

# R1: EPIC ANIMALS

threatened by the fishing industry due to dwindling fishing stocks and getting caught as bycatch on fishing long-lines. BUT seabird protection by one fishing industry was able to lower bycatch from 5000 birds a year (0.59 birds per 1000 hooks) to fewer than 0.01 per 1000 hooks! The South Georgia Patagonian toothfish industry took the following steps to lower bycatch: restrict fishing season, line-weighting and night-setting, and have compliance observers!



Tonight's Battle occurs in the Białowieża Primeval Forest where the last wild European bison (*Bison bonasus*) was shot in 1921. Captive breeding and species recovery plans have returned this bison to the wild, but few subpopulations exist today. A large male bison, otherwise invulnerable to wolves and winter weather, has succumbed to old age in the forest. "For in that sleep of death what dreams may come, When we have shuffled off this mortal coil" (Hamlet Act 3, Scene 1, Shakespeare, 1602). What comes to a bison carcass in Białowieża Primeval Forest are 14 bird and mammal species including ravens, red fox, wolf, racoon dog, pine marten, white-tailed eagle, boar and buzzards.

Animals will variously scavenge from the carcass for 100 days. During this period of decay, minerals from the carcass will leech into the soil. The calcium from the bones will linger for 7 years, but the nitrogen will be used by plants within a year. Earlier wolves had broken open the carcass rib cage, allowing the Raven's beak access to rich organ meat. Raven relies primarily on scavenging through the winter and March is the last month of intense scavenging. Spring will bring more opportunities for hunting fresh rodent meat.

MEANWHILE, 7000 miles away on the subantarctic Marion Island, South Africa, where half of Wandering Albatross pairs breed, our combatant male Albatross is yammering with his recently returned mate at the nest with their growing, just fed chick. But vicious invasive killers, with a taste for albatross, scurry in the nesting grounds! An invasive house mouse bites deep into Albatross's elbow! JUST THEN #MMMagic translocates Albatross to the bison carcass next to Raven! Disoriented, Albatross awkwardly extends his massive wings, even longer than the dead bison! Raven skip-jumps to the bison's head, closely watching the Albatross for any sign of aggression. Albatross dislodged the house mouse onto the tough, thick fur of the dead bison. Raven's fast beak brutally snatches and crushes the mouse. Albatross departs with a 10-second starting run and 15 wing flaps to achieve lift to the sky. With the right wind shear, he can soar hundreds of miles in a day without even raising his heart rate. RAVEN OUTLASTS ALBATROSS! Narrated by Prof. Katie Hinde.

# R1: EPIC ANIMALS

**Common Eurasian Boar (6) vs. Indian Grey Mongoose (11)** – The Common Eurasian Boar (*Sus scrofa*) has one of the largest distribution of all land mammals, currently found on 6 continents, but they are native to Eurasia. Humans introduced wild boars in the other areas where they now wreak havoc in new ecosystems. Boars belong to the order Artiodactyla (even-toed ungulates), their social groups of 6-20 are organized around female relatives and young. Solitary males weigh 80+ kg and get sociable during the mating season. In medieval European literature from Beowulf to Chaucer, the boar could allegorically represent the hero or villain, and depending on which, "that determines whether the boar is meant to indicate a mettlesome temper or a malignant one" (Thiébaux 1969).



Indian Grey Mongoose (*Urva edwardsii*) has a long body (38-46 cm) with an equally long tail (35 cm, ~1 stoat), and weighs 0.5 to 4 kg (~1-11 pounds). Their anal sacs produce secretions that reportedly smell like roses. Indian Grey Mongoose are nimble predators of insects, reptiles, mammals, and birds

AND skilled at evading and overcoming dangerous foes such as venomous snakes. For these reasons the dual nature of mongoose is both pest and savior and this duality featured in the Panchatantra (collection of animal fables first written in Sanskrit).



Tonight the combatants meet in the Indian state of Uttarakhand at the foothills of the Himalayan mountains at Rajaji National Park, where both species live sympatrically. Mongoose and Boar are foraging in the leaf litter in a patchy forest. The solitary adult male Boar searches snout first, nose to the ground, sniffing for nuts, fruit, roots, grubs, nestlings, eggs, he's not picky. Mongoose forages near a rounded, gathered pile of detritus... a rumbling growl-hissing fills the scene. Boar looks toward the growl-hissing as a king cobra (*Ophiophagus hannah*), risen from the pile confronts the Indian Grey Mongoose. Mongoose bares its sharp, carnivore teeth while its eyes lock on cobra's face! The cobra is a snake-hunter (**ophiophagy**), so the Mongoose isn't her preferred meal.

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Mongoose is also a snake-hunter, but this cobra is massive, much more than a typical mongoose meal. The two adversaries stare intently at each other. Boar finds a rich patch of delicious mushrooms and snarfls at the base of a nearby tree.



The cobra spreads its hood as an intimidating warning, hoping the mongoose will back down and hunt elsewhere. She doesn't want to waste her venom, but she can't withdraw BECAUSE MARCH IS COBRA NESTING SEASON! Cobra is aggressively defending her clutch of eggs in the nest she has constructed. But her eggs are a perfect mongoose meal! Cobra opens her mouth and bares two glistening venomous fangs. She can't squander her venom too much too fast with her eggs just laid and weeks of nest defense. And her Mongoose adversary has anti-venom defenses in his blood!

Cobra launch strikes at the Mongoose, Mongoose springs back! MISSED! HISSSED! Cobra sprint slithers at Mongoose, STRIKE LAUNCHES AGAIN! Mongoose evades her strike! BOAR IS INTO THE COBRA NEST OF EGGS! COBRA FLINCHES TOWARD HER NEST AND BOAR! For only a moment she's let down her guard against

the Mongoose! Mongoose rapidly bites cobra's head, crushing her skull. With the eggs now a lost cause, Mongoose drags the snake feast into the scrub and OFF THE FIELD OF BATTLE! BOAR OUTLASTS MONGOOSE! Narrated by Chloe Josefson and Katie Hinde.



Jessica Popescu

@JessPopescu

#2024MMM EPIC ANIMALS

RND 1 EMOJI BATTLE



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READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, & William Yates



Beyond the brief mentions in the tournament “battles,” the ASU Library TeaMMM put together a wonderful slide show of Epic Animals in Literature!  
[Check it out!](#)



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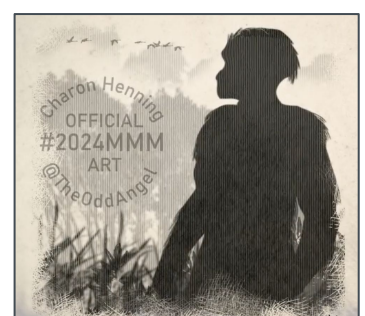
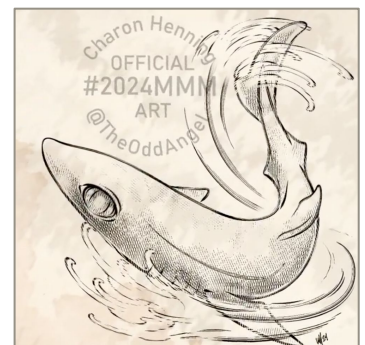
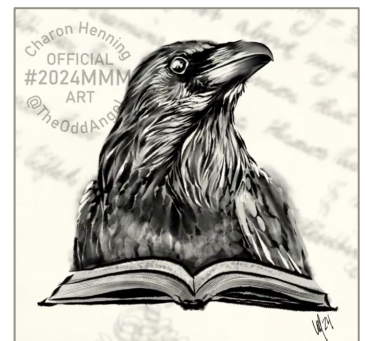
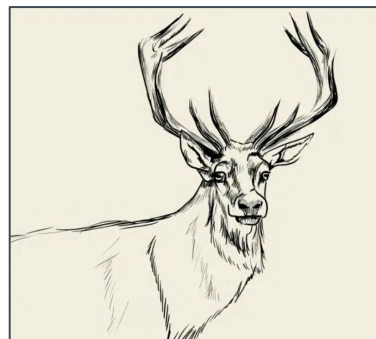
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# COMBATANT ARTWORK

THANK YOU  
ART teaMMM!



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# CURRENT BRACKET

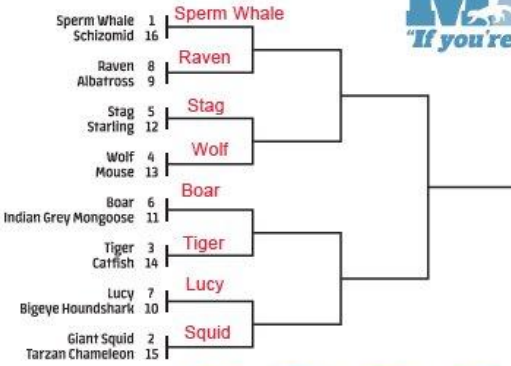
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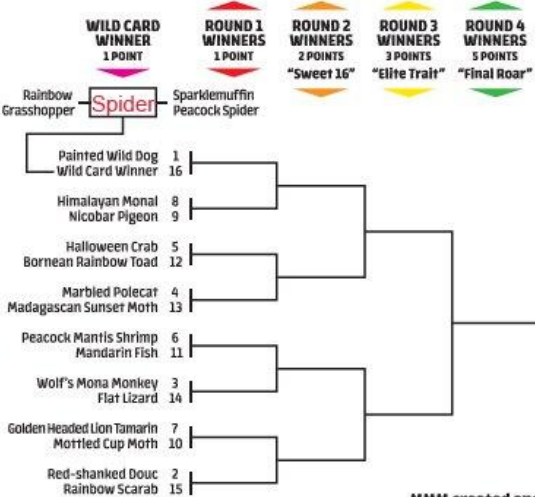


**ALL TOURNAMENT INFO:**  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
**NOTE:** MMM includes many non-mammal species

**EPIC ANIMALS**



**RAINBOW COLLECTION**



English Bracket v1.0



**CONNOISSEUR CRITTERS**



**TAKE A BOW**



MMM created and directed by  
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And a big THANK YOU! to our friends over at the Denver Museum of Nature & Science for their #2024MMM [youtube video showcase of Epic Animals in Literature!](#)



PENGUIN CLASSICS

## MARCH MAMMAL MADNESS

### Connoisseur Critters

Gird Your Stomachs for these 'Culinary' Curiosities

Energy and nutrients are essential to all living beings. Some carnivores have particularly specialized traits for acquiring, chewing, or digesting their meals. Similarly, some herbivores can safely consume high levels of toxins. And some truly fascinating species have adapted to dietary niches of really, really specific foods. Gird your stomachs and get ready to toast these combatants and their comestible curiosities in the **CONNOISSEUR CRITTERS DIVISION!** Tonight, there will be BLOOD!

**Great Skua (2) vs. Parasitic Guest Ant (15)** - Great Skua (*Stercorarius skua*) is a predatory seabird that nests primarily on remote islands of the North Atlantic. Skua typically head south for the winter, hunting for fish and floating the pelagic waves off the European & Northwest African coasts. A mottled brown bird, thick-shouldered and barrel-chested, with 4.5 foot wingspan, the powerful Great Skua can throw its 1.5 kg weight around to get the food it wants-whether stealing food from other seabirds or turning other seabirds into food!



Psychofox / Wikimedia Commons / public domain

Now, the next combatant needs some extra explaining in a complex "Three's a crowd" system. First, MEET the FUNGUS FARMER! In Central America, workers of an ant colony of *Sericomyrmex amabilis* farm fungus by gathering decaying plant material to feed to fungus in a garden inside their nest and the ants eat the fungus for nutrition. Second, MEET THE RAIDER! Agro-predator ants (*Gnamptogenys hartmani*) raid colonies of fungus-farming *Sericomyrmex*

# R1: CONNOISSEUR



W. Wheeler / Openverse / CC0 1.0

"to usurp their fungus gardens & nest structures with remarkable efficiency" (Adams et al. 2013). NOW, MEET THE COMBATANT! After stealth infiltrating the fungus-farming ant colony, Parasitic Guest Ant (*Megalomyrmex symmetochus*) eats the host's brood & fungus...BUT will also instantly attack raider scouts of agro-predator *G. hartmani*, usually preventing an invasion!

Parasitic Guest Ant, looking at host ant, "It would be a real unfortunate situation for yoose if we weren't here to protect yoose." Parasitic Guest Ant sits back & takes a bite of a host brood egg dipped in fungus. #AdaptiveProtectionRacket

Tonight our battle takes place in the Pelagic Zone of the Atlantic Ocean, as sea birds gather around a fishing trawler. Great Skua watches for some delicious fish offal to fall overboard from fish

processing on deck. MEANWHILE, in Panama, Parasitic Guest Ant, with two compatriots, patrol the host nest and encounter two raider scout agro-predator ants. Parasitic Guest Ant lunges forward, stabbing a raider with a specialized venom sting! As the raider ant falls, Parasitic Guest Ant pincher snaps off the raider ant's antennae and two legs! A MMMagic Portal translocates Parasitic Guest Ant from the host nest in Panama to the open deck of the fishing trawler in the ocean.

Parasitic Guest Ant attempts to get her bearings amongst the fish guts, as a fisherman squeegees the fish offal overboard and into the water! Great Skua, on wing, plunges into the water, getting a beak full of fish guts...and Parasitic Guest Ant! GREAT SKUA BYCATCHES PARASITIC GUEST ANT! Narrated by Katie Hinde.



**Kob Antelope (1) vs. Bear's Head Fungi (16)** – Kob antelope (*Kobus kob*) are medium sized antelopes, standing nearly 105cm (41 inches) at the shoulder and weighing up to 120kg (265 lbs). Males have characteristic "S" shaped horns curving up towards the tips that can grow to over

# CRITTERS & PLANTS

over 68 cm (27 inches). Kob regularly ingests soil (**geophagus**), which has higher concentrations of vital minerals like calcium and iron not found in their typical foods.



Dirk Froebel / Wikimedia Commons / CC BY 4.0; Franco Folini / Wikimedia Commons / CC BY-SA 2.0

Bear's Head Fungi (*Hericium abietis*) is a type of "tooth fungi." Instead of a stem and cap mushroom, Bear's Head grows outward from logs forming cascading spines 75cm (30 inches) long. Those spines, similar in color to a roasted marshmallow, are covered in spores. Although Bear's Head Fungi are edible, that is not what makes them connoisseurs. Bear's Head Fungi eat decaying wood! As a decomposer, consuming coarse woody debris is vital for concentrating key nutrients and replenishing nutrients in soil. Just like bears (the mammal), Bear's Head Fungi is both scavenger and predator! Besides eating dead wood, Bear's Head Fungi also attacks and eats living trees! By parasitically absorbing nutrients, Bear's Head Fungi creates wood decay, causing standing dead limbs or even standing dead trees.

These dead and dying standing trees can be important habitats for small mammals, birds, and insects.

Tonight's battle occurs in Kob's habitat in Kainji National Park. Established by combining several reserves, this is now the oldest national park in Nigeria. Here, where the rolling hills accentuate the deep savannah forests punctuated by many waterways, is where the Kob calls home. Currently near the end of the dry season, Kob needs to replenish key nutrients and craves mineral licks. Kob preferentially seeks a known soil sites for specific minerals to meet his nutritional needs. MMMagic transports Bear's Head Fungi, still clinging to rotting wood, from the lush woods of western Oregon to Kob's forest with braided streams. The dense fungal threads (mycelium) that can grow from a single spore and the tooth-like "Bear's Head" fruiting body settles into the dirt and onto the roots of a hardwood tree. BUT Bear's Head Fungi is a conifer specialist, and spores can only "hunt" and "scavenge" on evergreens! Bear's Head Fungi is powerless against the hardwood, the Fungi will have to sustain on the dwindling evergreen grasped by the mycelium! Whock-cracklesplint-puff! WITH HOOF AND TEETH, and and a dirt-eating grin, Kob tears through Bear's Head Fungi to reach the mineral-laden soil below.. Kob doesn't notice the mix of churned soil, rotten wood, and... microscopic spores now clinging to his hoof. KOB TRAMPLES BEAR'S HEAD FUNGI!! Narrated by Brian Tanis.

# R1: CONNOISSEUR



Drew Avery / Wikimedia Commons / CC BY 2.0

**Crested Porcupine (3) vs. Velvet Worm (14)** – Crested Porcupines (*Hystrix cristata*) are one of the largest rodents in the world and can weigh up to 60 lbs, with females being larger. They are covered in sharp quills, some of which can be raised into a crest along the head / back, giving them their name. Primarily herbivorous, Crested Porcupines also eat a variety of plants with antiparasitic properties, especially during times of high parasite risk.

Velvet Worms (*Peripatopsis overbergiensis*) look like a slug crossed with a carton caterpillar and are covered in tiny, bristle-like structures giving them a grey-brown, velvet appearance. Velvet Worms have two high-speed "slime cannons" on their heads that



Magriet B / Openverse / CC BY-SA 4.0

shoot sticky slime at prey from a foot away. The quick-drying slime hardens so the Worm can use its saliva to start digesting the trapped insect.

Tonight's battle takes place in the foothills of Monti Sibillini National Park, in central Italy. This culturally rich area is home to many animals, including bobcats, wolves, boars and our Crested Porcupine. It is well past sunset and our Velvet Worm awakes beneath the leaf litter to find itself MMMagically transported to a chilly version of the South African woodlands it normally calls home. Prone to dehydration in dry/cold conditions, the Worm considers just hunkering down in this new place when the ground begins to vibrate. Whuff. Snuff! Whuff! The leaves begin to shift overhead as our Porcupine rifles through the ground litter in search of roots and tubers. The Porcupine's long whiskers brush against the scales of the Worm. Two streams of sticky slime shoot from the Worm...STRAIGHT INTO THE PORCUPINE'S EYE! Porcupine jerks her head back as the slime quickly hardens, gluing her eye shut! Turning and stumbling she tries to paw at her eye, the long needle-like quills on her side dig into the ground, piercing straight through the Worm! PORCUPINE IMPALES VELVET WORM!!  
Narrated by Alyson Brokaw.

**Koala (4) vs. Cobra Lily (13)** – Koala (*Phascolarctos cinereus*) are Australian marsupials and these Connoisseur Critters are highly specialized to feed only on eucalyptus, called gum trees Down Under. There are hundreds of

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different types of eucalyptus trees in Australia. Digesting eucalyptus is tricky business because it is high in fiber, low in protein and has toxic compounds. Koalas have a long digestive tract and lots of microbial buddies in a big caecum to digest cellulose and Koala has special traits to metabolize toxins.



Till Niermann / Wikimedia Commons / CC BY-SA 3.0

Cobra Lily (*Darlingtonia californica*) aka California Pitcher Plant is a large (up to 3ft tall) carnivorous plant in northern California and SW Oregon. Its curved bulbous top and wing-shaped leaves look like a rearing cobra, complete with forked snake tongue. Cobra Lily lures and traps insects in the fluid-filled pitcher-shaped leaves. Insects drown in the bacteria-laden fluid of the pitcher. Bacteria help to further breakdown and digest the insects, providing the plant with dietary nitrogen.



NoahElhardt / Wikimedia Commons / CC BY-SA 3.0

Tonight's battle occurs in the Morano region of New South Wales, Australia, a high elevation plateau of grassy woodlands. Our large, 10kg Koala male awakes after a long day of slooooooow digesting. Cobra Lily is MMMagically transported to this "horrible" subalpine habitat. Cobra Lily needs to be cool and wet to survive. Near the foot of an eucalyptus, Cobra Lily stretches its extensive rhizome root system out for water, but finds none. Abandoning his daytime sleeping spot in a manna gum tree (*Eucalyptus viminalis*), Koala clambers to earth. Koala is adapted for tree living with long limbs, strong muscles, and specialized gripping feet, but he can still effectively locomote on the ground. Koala takes long, slow strides through the moonlight approaching Cobra Lily, but Koala's vision, best suited for night-time, does not fully perceive the vibrant red coloration of the fully mature plant. Cobra Lily's roots are beginning to be stressed without water and cool soils.

# R1: CONNOISSEUR

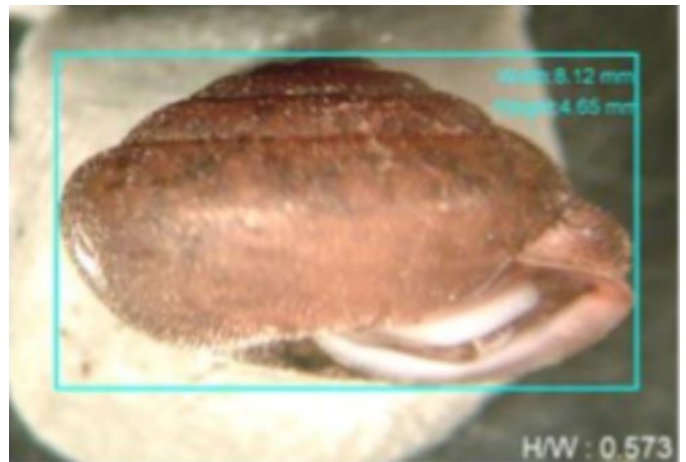
At least the daytime sun is not adding to the challenge of this new environment. Koala strolls closer as Cobra Lily droops! Koala shuffles well beyond Cobra Lily in search of a brittle gum tree (*Eucalyptus mannifera*) to chew on high-sodium bark, since manna gum leaves are low in sodium and Koala needs his nutrients. Cobra Lily remains desiccating on the field of battle as Koala strolls away! COBRA LILY OUTLASTS KOALA!  
Narrated by Jessica Light.

**Tufted Ground Squirrel (5) vs. Wichita Mountains Pillsnail (12)** – Tufted Ground Squirrel (*Rheithrosciurus macrotis*) is known for elongated hairs at the tips of its ears and a ginormous tail. Squirrel measures >600mm (>23 inches) tail and body combined and weighs in at over 1kg (over 2 pounds). Tall tales of assassin strikes from the canopy notwithstanding, Squirrel is a Connoisseur Critter because it has specialized tooth, jaw, and skull strength to access very hard seeds.



Royle Safaris / iNaturalist / CC BY-NC 4.0

Wichita Mountains Pillsnail (*Euchemotrema wichitorum*) was described relatively recently from the semiarid Wichita Mountains of Oklahoma. This small, 10mm diameter mollusk is an air-breathing land snail and is identifiable by a strongly depressed shell and small number of whorls. Land snails are primarily detritivores, feeding on decaying matter and vegetation, fruit, and fungi in the leaf litter. These snails serve important ecosystem functions contributing to nutrient cycling, soil formation, and fungal dispersal.



Cooper / <https://shareok.org/handle/11244/326644> / CC-BY-ND

Home habitat advantage goes to the Tufted Ground Squirrel, so the combatants will meet on the Southeast Asian island of Borneo. Squirrel is foraging at the base of a *Canarium decumanum* tree searching for its favorite hard seeds. Meanwhile, Pillsnail is gliding along the Wichita Mountains Wildlife Refuge understory, using its “tongue” (toothy radula), that mollusks have for feeding, to scrape up delicious decaying detritus. One imagines Pillsnail humming to itself "Oklahoma, where the littered leaf can sure taste sweet". Suddenly,

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Pillsnail is MMMagically transported to the humid, tropical forest of Borneo! Pillsnail instantly appreciates the higher humidity, and since leaf litter and detritus is pretty much the same everywhere, Pillsnail continues to forage contentedly. Squirrel is stirring up the leaf litter, trying to find a *Canarium* seed. Squirrel feels something with his dexterous hands and pulls the seed-like object from the leaf litter. It's Pillsnail! Without hesitation, Squirrel gives Pillsnail an exploratory test bite. Land snail shells are HARD, with 3 layers that protect Pillsnail from predators. CRRAAACK!!!! Squirrel's INCISORS break through Pillsnail's SHELL! Squirrel's incisors are unique among tree squirrels, with many ridges that create saw-shaped sharp edges. A meal of Pillsnail delivers some much needed calcium to Squirrel's diet. SQUIRREL CHOMPS SNAIL!!!! Narrated by Jessica Light.

**Chestnut-headed Bee-eater (8) vs. Hairy-legged Bee (9)** – Chestnut-headed Bee-eater (*Merops leschenaulti*) has a bright red head, reminiscent of (\*checks notes)... a chestnut! It also has a yellow throat that ends in a dark black band of feathers called a “necktie”, because being a connoisseur means dressing up for fine dining. The Chestnut-headed Bee-eater is a connoisseur that eats... (\*checks notes)... Bees! While the Chestnut-headed Bee-eater will eat any large flying insect, 20-90% of their diet falls in the bee order Hymenoptera.

Hairy-legged Bees (*Centris* spp.) are around 3cm long with... (\*checks notes)...hairy legs! These



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hairs are frequently used to gather oils off flowers which can help grab pollen and helps waterproof the burrows they live in. What really makes Hairy-legged Bees connoisseurs is lachryphagy aka TEAR DRINKING! These Bees get essential nutrients like sodium, potassium, and proteins not found in pollen by lapping eye secretions from larger vertebrates like reptiles and mammals

Tonight's battle location is The Sundarbans, a UNESCO world heritage site in southeastern Bangladesh, conserving one of the largest continuous mangrove forests on the planet. It is a vital habitat for a large diversity of threatened species. Amid the winding estuarine mudflats, the Chestnut-headed Bee-eater is sitting on the bare branch of a lychee tree (Genus Litchi). This is Chestnut-headed Bee-eater's home habitat, spending the majority of its time perched in the tree near water, scanning for a quick meal. Meanwhile in northern Brazil, researchers are watching a tick-laden iguana sunning itself in the sand, when a

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large female Hairy-legged Bee starts hovering around its head. With > 200 species of these bees, it is hard to identify them midflight and from a distance. Hairy-legged Bees don't need to make their host cry because turtles, iguanas, and some lizards produce salt-rich fluids from special glands near their eyes and nose as a way to shed waste. The iguana is "somewhat disturbed" and mostly closes its eyes as the bee approaches. But that won't stop the Hairy-legged Bee! It slowly lands near the eye, "inserts its mouthparts beneath the eyelid" and laps up those delicious tears (Sazima 2020).

Much to the joy of the iguana, a MMMagical portal opens and transports the Hairy-legged Bee away to the field of battle. As a solitary bee, the Hairy-legged Bee is not too concerned, particularly as the tropical climate feels fairly similar to northern Brazil. Hairy-legged Bee feels even better when it detects a very large reptilian basking nearby. It's a saltwater crocodile, a "salty" Down Under! Bee has never encountered one before, only caiman live in the region of the Arapiuns River it calls home. But tears are tears, so Hairy-legged Bee flies in for a salty snack!

Above the bank, Bee-eater has taken flight! Preferring to search for prey on the wing, Bee-eater circles with quick wingbeats and notices Hairy-legged Bee hovering near the face of the crocodile! Bee-eater doesn't recognize the bee, but doesn't need to know the species to know it's going to BEE a delicious dinner! Bee swoops for crocodile tears BUT WHERE ARE THE SALTY'S SALTY TEARS!? Saltwater crocodiles secrete

their excess salt not from their tears, but from glands inside their mouths! Bee drifts from the eye and gets closer to the open jaw of the crocodile... closer... SNAP!!!! Skillfully darting in, Chestnut-headed Bee-eater snatches Hairy-legged Bee out of air with its tweezer-like bill! Flying up to a perch, Bee-eater smashes Bee into the branch to ensure it is dead before swallowing it up! BEE-EATER EATS BEE! Who could have predicted such an outcome from the exact names of these combatants?!? Narrated by Brian Tanis.



M. C. Cavalcante, F. F. Oliveira, M. M. Maués, and B. M. Freitas / Wikimedia Commons / CC BY 3.0

## Fork-Marked Lemur (6) vs. Batfly(11)

While the etymology of the genus name *Phaner* comes, unexpectedly, from an 1870 W.S. Gilbert play, the fork-marked lemur's common name is inspired by the black stripe that runs along its spine, forks at the crown of its head, and continues down its face. Covered in long, dense, mostly brownish-grey fur, the Fork-Marked Lemur (*Phaner furcifer*) has a head-to-tail length of ~25 inches (1.9 stoats) & weighs in at 1.1 pounds (2.3 stoats). Like all lemurs, it's from Madagascar.

# CRITTERS & PLANTS



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Batfly (*Nycteribiidae*) feed only on the blood of bats. They are wingless and their flattened bodies give them a spider-like appearance, living their adult lives crawling through a bat's fur. Unique among flies, developing larva are fed by a "milk" produced by special glands INSIDE the mum. The pupa are then left on bat roost walls to emerge and find their own bat host to survive on bat blood. #LifetimeLiquidDiet

Tonight's battle occurs in northeastern Madagascar, home of the Lemur. The warm rainy season is upon us. With the arrival of dusk, Fork-Marked Lemur stretches her legs and emerges from a sleeping hole

in a baobab to forage. Fork-Marked Lemur will consume fruit and insects, but her diet is mostly eating the sap of trees (gumivory). And 90% of sap is made of sugars.

MEANWHILE, not far away in a cave near Antonibe, Madagascar, Batfly (*Eucampsipoda madagascarensis*) has been drinking blood from his host bat (*Rousettus madagascariensis*). Batfly's host bat is preparing for an evening of foraging. The 63 gram bat drops from the ceiling roost toward the crack exit from the cave system into the misty warm night... DIRECTLY INTO THE HUNTING PATH OF A PREDATORY BARN OWL WITH A TASTE FOR THIS BAT SPECIES! (Batfly is merely bycatch). Back at the Field of MMM BATTLE, Fork-Marked Lemur reaches one of her favorite Terminalia trees, with globs of sap leaking out from the wood burrowing activity of beetle larvae.

MEANWHILE: THE NOBLE STEED'S FAST EVASIVE MANEUVERS KEEP THE BATFLY JUST BEYOND THE TALONS OF THE BARN OWL! Back on the Field of MMM Battle, Fork-Marked Lemur shimmies about the tree to her known spots, scooping up globs of that sweet sweet sugar.

MEANWHILE: Noble Steed with Batfly pivots in the air just as #MMMagic portal translocates Batfly & Noble Steed to the Terminalia tree where the Lemur is sap-eating!

# R1: CONNOISSEUR

Noble steed, breathing heavy, alights near the clumped leaves at the end of a branch, settling just above the Fork-Marked Lemur. Batfly clings to his noble steed. Batfly takes a sip of blood. Fork-Marked Lemur ignores the fruit bat as she noisily slurps up the last of the available sap. With the sap seeps tapped, Fork-Marked Lemur quickly descends the tree. She has a very precise series of sap spot visits for her nighttime foraging: "Each individual has a routine foraging itinerary between trees." (Nash 1986). Off to the next Terminalis tree, Fork-Marked Lemur quits the Field of Battle! Batfly, atop Noble Steed, OUTLASTS Fork-Marked Lemur!!! Narrated by Alyson Brokow, Laura Durgavich, Katie Hinde.



Julian Alzate / Openverse / CC BY-NC 4.0

**Pitcher Plant (7) vs. Northern Short-tailed Shrew (10)** – Pitcher Plants (*Nepenthes rajah*) are adapted for CARNIVORY as their source of key nutrients, such as phosphorus and nitrogen, not available in the soils where they grow. During development, *Nepenthes rajah* are still small and their pitcher captures invertebrates with hard

exoskeletons (**chitin**) that have the minerals plants crave. Once *N. rajah* matures, the pitchers become larger and their dietary targets expand.



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The Northern Short-tailed Shrew (*Blarina brevicauda*) is widely distributed across the Midwest and New England, with fur colors silver to black with brown tips. They have a notably short tail, which is only 20% of its body length. Northern Short-Tailed Shrew could be mistaken for a rodent, but belongs to the order Eulipotyphla and typically hunts for earthworms, centipedes, and insects. BUT they have been known to take down baby rabbits, small snakes, and salamanders.

Tonight's battlefield is Mount Kinabalu in Malaysian Borneo, where Pitcher Plant's sweet-scented nectar wafts as a siren call, enticing its nutrient delivery system closer. Meanwhile in North America, combatant Northern Short-Tailed Shrew is one of only 10% of shrews to have survived the winter. He is on the hunt when

# CRITTERS & PLANTS

MMMagic translocates him to a lushly forested mountain. Nearby, a subadult mountain treeshrew has climbed onto the Pitcher of the Pitcher Plant, and stands with back legs spread to carefully balance on the slippery lip of the large pitcher. Mountain treeshrew reaches up with his snout and licks nectar from the leaf that serves as the lid of the Pitcher. While standing, the mountain treeshrew pees and poops into the deep pitcher of the Pitcher Plant, providing nitrogen and other nutrients not available in the nutrient poor soil! The Northern Short-Tailed Shrew sizes up this novel mammal, about the size of a meadow vole, which is one of NST Shrew's mammal prey! NST Shrew jump attacks the subadult mountain treeshrew WITH A BITE THAT DELIVERS TOXIC SALIVA! NST Shrew's venom is most similar to the venom of cobra and coral snake!



Together the two shrews tumble INTO THE PITCHER PLANT in a gruesome fluid stew of poop, pee, bug sludge and digestive enzymes!

NST Shrew is trapped beneath his prey in the bottom of the fluid-filled Pitcher, struggling for air! The toxin from the NST Shrew's venomous bite is slowly killing the mountain treeshrew. The treeshrew is going into respiratory failure and blood flows freely from the bite wounds. The weight of the dying prey grows heavier on the NST Shrew. NST Shrew twists to scrape his claws against the PITCHER PLANT! At home he digs 2.5 centimeters a minute, but no time for his typical breaks to rest now! NST Shrew's robust CLAWS BREAK THROUGH THE PITCHER. Doing the sideways somersault that pushes dirt out of his tunnels, NST Shrew kicks hard with his back feet against the dying mountain treeshrew to push his way through the rip in the Pitcher Plant!! SQUELCH!! In a gush of bug sludge and toilet gunk, NST Shrew slides through the tear in the Pitcher Plant! NST Shrew runs away from the field of battle leaving behind a damaged plant and the digesting remains of one of the \*extremely\* rare instances of a mammal being digested in the world's largest carnivorous plant. PITCHER PLANT OUTLASTS NORTHERN SHORT-TAILED SHREW! Narrated by Katie Hinde.



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## #2024MMM CRITTER CONNOISSEURS



7:12 PM · Mar 14, 2024 · 447 Views



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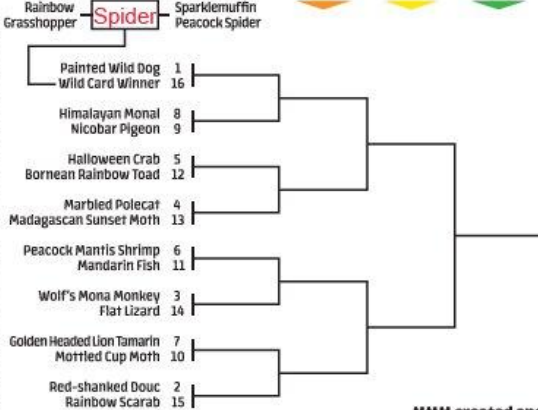


ALL TOURNAMENT INFO:  
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 NOTE: MMM includes many non-mammal species

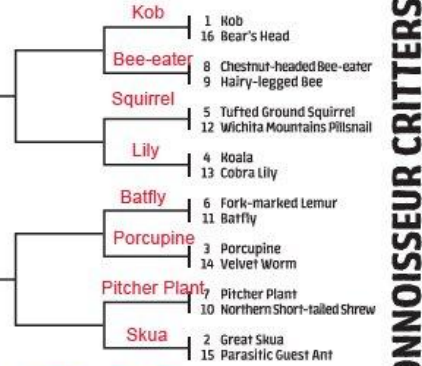
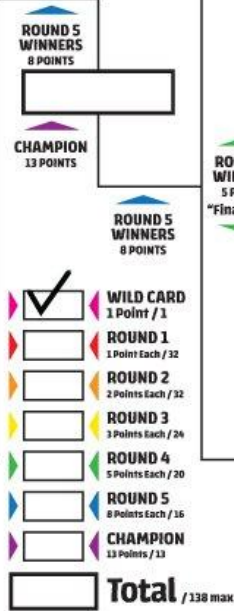
EPIC ANIMALS



RAINBOW COLLECTION

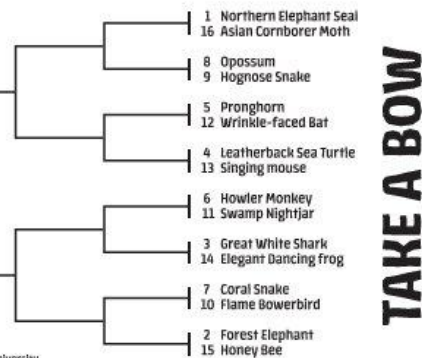


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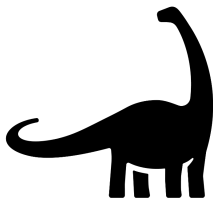
CONNOISSEUR CRITTERS

TAKE A BOW



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And a big THANK YOU! to our friends over at the Carnegie Museum of Natural History for their #2024MMM [essay about why Latin binomials matter & predictions for Pitcher Plant vs. Shrew!](#)



PENGUIN CLASSICS

## MARCH MAMMAL MADNESS

### Rainbow Collection

"Be thou the rainbow to the storms of life!"

Tonight these rarely overlooked, brilliant beasts combine colors, sometimes across a spectrum only they can see, on their flamboyant forms. To paraphrase Kermit, "why are there so many, species with rainbows, and what's with their vibrant hides?" Coloration may be about recognizing mates of one's own species, signaling combat abilities, or for dazzling courtship displays, among other signals. Get ready to salute these striking smoke shows in the **RAINBOW COLLECTION DIVISION!**

**African Painted Dog (1) vs. Sparklemuffin (16)**  
African painted dog (*Lycaon pictus*) get their name from their beautiful tricolor coat of browns, white and black, but interestingly lack a fur undercoat. The species is listed as endangered as it has lost most of its wide range over sub-Sahara Africa. They current live in pockets throughout the continent, mostly in the east and southern regions. African painted dogs live & hunt in large social groups. In fact the larger the group, the better they are at taking larger prey like wildebeest and kudu.



AfricanConservation / Wikimedia Commons / CC0 1.0

Sparklemuffin (*Maratus jactatus*) males have vibrant teal & orange coloration for their elaborate courtship dance displays. If their dances are not impressive enough, the female may make a meal of THEM! Sparklemuffin females are a rich mix of browns, tans, and grey, allowing them camouflage in their home habitat in Australia.

Today's battle takes place in the arid, dry ground of the scrubby savanna the painted dog calls home: Ngorogororo Conservation Area, Tanzania, not too dissimilar a habitat for Sparklemuffin. The Spider arrives the battle space in Tanzania

# R1: RAINBOW COLLECTION

via sweepstakes, tucked away in the cargo pocket of an Australian tourist. Sweepstakes is an unintended dispersal of animals by nature or human travel & shipping. The jostling 4x4 tourist vehicle skids to a stop, as a pack of African Painted Dogs trot into sight, juveniles tumble playing along side of the dirt road... This is an uneven match: Sparklemuffin, is ~ 5mm long (size of a grain of rice) and an adult African painted dog is 20-25 kg (or 100 stoats), with females being a little bigger. The tourist reaches into her camera-bag to grab her telephoto lens set-up for wildlife photography and leans out the open door to get the perfect pic. Take only photos, but will she leave only footprints?

Sparklemuffin wanders out to the edge of the camera bag, jumps out onto the step of the open-air safari vehicle... out on the ground, African painted dog could squash sparklemuffin without noticing or trying! Sparklemuffin clinches down tight on step of the 4x4 to harness kinetic energy in his legs... preparing for one of his extraordinary leaps... back into the interior of the jeep! Sparklemuffin skitters back to the now familiar pocket of the camera bag of the Australian tourist! The tourists snap some amazing pictures of the adorable wild dogs frolicking & grooming each other, when the guide learns lions are nearby at a giraffe kill! The guide drives the tourists away from the soon to be napping African Painted Dogs! Let's hope Sparklemuffin isn't discovered and erroneously "eliminated" by Australian Pest control on his return trip home! PAINTED DOG OUTLASTS SPARKLEMUFFIN!! Narrated by Prof. Danielle Lee.

## Red-shanked Douc (2) vs. Rainbow Scarab (15)

- The Red-shanked Douc (*Pygathrix nemaeus*) has gray body, white tail, black legs, maroon "stockings," white forearms, white cheeks, yellow/red face, and blue eyeshadow. Though sometimes called a "costumed ape," it's in fact a type of monkey. A member of the subfamily Colobinae, which also includes the schnozz-tastic proboscis monkey, the Red-Shanked Douc weighs 10.9 kg (~50 stoats) and has a total length of 60 inches, half of which is tail.



Long Vu / Wikimedia Commons / CC BY 4.0

Distributed across North America, the eye-catching Rainbow Scarab (*Phanaeus vindex*) has a coppery thorax and metallic green abdomen. Males also have a prominent black horn curving backward from the head toward the thorax that is used to attract females and to fight other males. Despite their splendiferous coloration, Rainbow Scarabs have humble beginnings...in POOP! That's right, Rainbow Scarabs are a type of dung beetle. Males and females work together to tunnel through a dung pat and produce a brood ball, which is placed in a chamber beneath. Like other

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dung beetles, Rainbow Scarabs decompose waste, help aerate soil, and add nutrients to the soil.



Tonight we are in the Son Tra Nature Reserve in Vietnam, home to approximately 2,000 red-shanked doucs. Red-shanked Douc is in the forest with his group members, jumping from branch to branch to travel between foraging sites. At Son Tra, doucs have been documented eating over 500 different plant items. Rainbow Scarab, delivered via MMMagic, has just arrived on a branch in the forest canopy, but is not adapted to

scampering on trees. Red-Shanked Doucs consume insects, according to studies of their poo. Red-Shanked Douc jumps to Rainbow Beetle's branch, bouncing the branch, skittering the Rainbow Beetle dangerously close to the edge of the branch! SQUISH!!! The grasping foot of Red-Shanked Douc has inadvertently squashed Rainbow Scarab as Douc locomotes to find more delicious leaves, consuming tiny flies on the leaves merely as by-catch and not intentionally consumed! DOUC LANGUR CRUSHES SCARAB BEETLE! Narration: Dr. Laura Durgavich.

**Halloween Crab (5) vs. Bornean Rainbow Toad (12)** – Halloween Crab (*Gecarcinus quadratus*) is a multicolored land crab of Pacific coastal rainforests of Mexico and Central America. This black, orange, and purple beauty is nocturnal, lives in forests with sandy soils as adults who return to the sea to breed. Halloween Crab are ecosystem engineers in coastal areas. They influence the carbon cycle by taking leaf litter from the surface to their burrows ~19 inches below the ground which affects how plants establish roots and grow.



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Bornean Rainbow Toad (*Ansonia latidisca*) is dark purplish-brown on its back, yellow on its belly with red, green, yellow and orange markings. It has exceptionally long toes and the females are 20% larger than males, at a whopping 52 mm in length. Bornean Rainbow Toad is threatened by habitat loss for agriculture and recreation. In fact, one of the two only known locations of the species was recently developed into a golf course & theme park.



Bornean Rainbow Toad is positioned in the Bornean tree canopy, tongue-flicking her favorite prey... ants! Suddenly, #MMMagic transports her to Naos Island on the Pacific coast of Panama near Smithsonian Tropical Research Institute. The Smithsonian Tropical Research Institute lab is adjacent to rocky intertidal shorelines, cobble and sand beaches, tidal mud flats and estuarine habitats. With evening setting in, Halloween Crab emerges from beneath a cover of rocks and logs on the edge of the forest and sandy beach to begin its nightly search for worms, fruits and insects. Bornean Rainbow Toad waddle-crawls through the sand to the base of a log, zeroing in on an ant. Partially buried, she pauses to lick her eyes, clearing them of sand. Bornean Rainbow Toad begins aggressively

wiggling her 4th hind toe, a prey localization behavior observed in many frogs and toads (anurans) shortly before they tongue-flick their target. The wiggling toe, which has the appearance of a small worm, catches the attention of Halloween Crab. Halloween Crab keeps a look out for predators from above while simultaneously zeroing in on the wiggle worm with its amazingly complex vision. CR-RUNCH!!!! HALLOWEEN CRAB DE-FEETS RAINBOW TOAD!!!! Narrated by Dr. Tara Chestnut.

**Golden Headed Lion Tamarin (7) vs. Mottled Cup Moth (10)** – With a black body and fiery red mane, the Golden Headed Lion Tamarin (*Leontopithecus chrysomelas*) is one vibrant primate! Found only in the tropical forest of southern Brazil, it weighs 1.5 pounds (~ 3 stoats) and stretches 28 inches from head to tail (~2 stoats). As a tree-dwelling (arboreal) monkey, golden headed lion tamarins spend their days scampering through the forest canopy at heights of 10-30 feet, dining mostly on fruit and playing an important role in seed dispersal.



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Mottled Cup Moth (*Doratifera vulnerans*) is named for the cup-like cocoon it emerges from and is found in areas along the east coast of Australia. It has a brown abdomen and mottled brown wings that span 4 centimeters (1/10 of a stoat) in an explosion of... neutral tones?!?! The Mottled Cup caterpillar, on the other hand, has more flair: it is bright red with yellow and green marks on its back.



Our combatants meet in the Una Biologica Reserve in Bahia, Brazil, part of the Discovery Coast Atlantic Rainforest Reserves World Heritage Site. Golden Headed Lion Tamarin is in the forest with his group members, jumping from branch to branch to travel between foraging sites, when on a tree trunk he sees....MMMagicked to the field of battle....the Mottled Cup Moth, which is still in its CATERPILLAR stage in March!! Golden Headed Lion Tamarin vertically leaps and clings closer to get a better look at the CATERPILLAR! But what does he SEE? With dichromatic (two color) rather than trichromatic (three color) vision, the male monkey does not differentiate the reds and greens.

The 2cm Caterpillar stands in place on the tree trunk. Curious, Golden Headed Lion Tamarin slowly reaches his fingers toward Caterpillar...\*\*\*MONKEY SHRIEK\*\*\*!

The Golden Headed Lion Tamarin's finger has contacted a single spine from the Mottled Cup Caterpillar, resulting in the deployment of "stunningly complex" TOXINS! "Each spine, which the caterpillar everts defensively, acts as ""an independent unit [for] producing, storing, & injecting venom."" The tips break off when touched, releasing a venom similar to that of spiders and wasps that induces a painful, burning sting & inflammation" (Walker et al 2021). Golden Headed Lion Tamarin shakes and licks his hurting finger before leaping away to rejoin his family... BEYOND THE FIELD OF BATTLE! MOTTLED CUP MOTH CATERPILLAR VENOM STABS GOLDEN HEADED LION TAMARIN! Narrated by Lara Durgavich.

**Himalayan Monal (8) vs. Nicobar Pigeon(9)** – Himalayan Monal (*Lophophorus impejanus*) is known as the danphe in its native Nepal! The danphe is the National Bird of Nepal, weighing in at up to 2380 g (10.82 stoat weights) and 70 cm long (2.06 stoat lengths). #StoatsAsMeasurement danphes are a type of pheasant, or long-tailed birds from Asia where the males are often showier than the females (aka sexual dimorphism)! In this department, danphe males do not disappoint as they are colorful and have a fancy hat atop their head! These boys are not afraid of mixing and matching colors: danphe males have metallic, iridescent plumage ranging from purples, blues, and greens, with lovely contrasts of copper in there too. The female danphe keep it much more subtle, opting for a classy brown and black combo. This helps them hide, or camouflage, in their

# R1: RAINBOW COLLECTION

habitat while they take care of their similarly subtle chicks. Male danphe don't help raise the chicks, but they do stick close by to defend their families from predators. Maybe that's for the best... their coloration kind of makes them stick out like a sore thumb, especially in the snowy winters of Nepal.



Koshy Koshy / Wikimedia Commons / CC BY 2.0

Not to be outdone, Nicobar Pigeon (*Caloenas nicobarica*) is a large iridescent pigeon! These pigeons can be up to 40cm long (~1.2 stoat lengths) with males weighing up to 525g (2.39 stoat weights) #StoatsAsMeasurement These ground-dwelling pigeons are much less sexually dimorphic than the danphes. While the females are slightly smaller than males, both have grey plumage that shifts towards a shiny, iridescent green/copper coloration on their wings. Both sexes also have long, fabulous mane-like neck feathers (hackles), and bring their outfit together with a pure white tail. They might be the closest living relative to the dodo, but they look anything but like a dodo.

It's a quiet morning in Nepal's Sagarmatha National Park. The sky is a gentle pink as the first rays of

sunshine make their way over the world's tallest mountain and wake up the forest. Sagarmatha (Nepal), Chomolungma/Qomolangma (Tibet), Everest (Britain) is the world's tallest mountain above sea level. Amongst the rhododendron and bamboo, a small covey of danphe are starting their daily forage. Early bird gets the worm and all that, right? Well, if not a worm, a tuber should do. Our combatant male Danphe starts digging into the snow, when he notices a very fancy Pigeon acting strangely on a bare rock nearby. Nicobar Pigeon has his hackles up and is making a deepening cooing noise, strutting around...until he notices he's "not in Kansas anymore, Toto!" because MMMagic has translocated him to Nepal! This high altitude forest feels a bit frigid compared to his tropical home in the islands of SE Asia. Nicobar Pigeon was right in the middle of his mating display! Where'd the object of his affection go?? He makes a harsh, guttural croak to see if any of his flock answers back. Danphe is taken aback by the croaks. That can't be that weird Pigeon, right? Could that be a dog? Some other predator? One of the members of Danphe's flock rustles in the snowy



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understory behind them. Altogether the noises disturb Danphee enough that he flies to reposition with better vantage and vigilance AWAY FROM THE FIELD OF BATTLE! NICOBAR PIGEON DEFEATS DANPHE (MONAL)! Narrated by Dr. Mauna Dasari.

**Wolf's Mona Monkey/Guenon (3) vs. Flat Lizard (14)** – Wolf's Mona Monkey/Guenons (*Cercopithecus wolfi*) are a notably colorful group of primates. Bright facial colors and patterns allow individuals to know their potential mates as rainforest guenons often hang out in mixed species groups as an anti-predator tactic. Wolf's Mona guenon has different colored body parts of black, red, brown, grey, white, and yellow. Males are about ~30% heavier than females, tipping the scales at 10lbs (4.6kg, 21 stoats). Their pointy ears have tufties, kind of like a bobcat. Unlike many other primates that provide essential forest services of eating fruit and pooing intact seeds throughout the forest (seed dispersal), Wolf's Mona guenons can be seed killers that chew and digest the seeds for nutrients.



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Flat Lizard (*Platysaurus broadleyi*) males can be a combination of rainbow colors red, blue, teal, green, purple, orange and yellow. Flat lizard males display to rivals by doing a push-up/plank off the rock and puffing out their throat flaps that "acts as a UV signal of their fighting ability". Flat lizards with brighter colors are more likely to compel rivals to back down before a fight. Rivals are more likely to escalate to a physical fight if their opponent has duller colors.

Tonight's battle occurs in the Democratic Republic of Congo in the forest interfluvium of the Lomami and Lualaba Rivers, home to one of three Wolf's Mona Monkey subspecies, specifically *C. wolfi elegans*. During March, with many trees fruiting in the forest, Wolf's Mona Monkey chows down on one of the world's most important fruits...FIGS! Found in 75 countries, figs are eaten by 1274 bird and mammal species. Talkin' 'bout- Hey now (Hey now)- FICUS FICUS ALL DAY!

MEANWHILE, in Augrabies Falls National Park in South Africa, Flat Lizard basks in the rays of the late Austral summer sun amongst the rocks. BOINGK! A small red fig from the Namaqua Fig plant has dropped onto the rock beside Flat Lizard...

# R1: RAINBOW COLLECTION

who immediately gorges on this rare remaining delicious and nutritious fruit from the spring and summer bounty. BECAUSE FLAT LIZARD IS A RARE FIG-EATING LIZARD! Still Talkin' 'bout-hey now (hey now)- FICUS, FICUS ALL DAY!



Flat Lizard is a key seed disperser for the Namaqua Fig to germinate and grow in rock cliff crevices beyond most herbivores. Like Nile crocodiles gather to gorge during the wildebeest migration, "more than a hundred lizards aggregate underneath fruiting fig trees" (Greef & Whitting 1999). Flat Lizards are the first lizard known to have evolved traits for detecting the TASTINESS OF FIGS!

MMMagic Portal whisks the Flat Lizard way up higher into the tree canopy where Wolf's Mona Monkey is stuffing his cheek pouches with fresh figs ~18 feet (6m, 20 stoats) above the forest floor! Appalled to be arboreal and possibly detecting a hint of ripe fig fallen on the forest floor, Flat Lizard swiftly climbs down the tree trunk to terra firma... AND OFF THE FIELD OF BATTLE! MONA MONKEY OUTLASTS FLAT LIZARD!!!! Narrated by Prof. Katie Hinde.

**Peacock Mantis Shrimp (6) vs. Mandarin Fish (11)** – Peacock Mantis Shrimp (*Odontodactylus scyllarus*) is one of over 400 species of mantis shrimps (Order: Stomatopoda) worldwide and they're collectively known for one major feature: they come to fight! Stomatopoda are divided based on how they throw hands. The shrimp on the evolutionarily older branch are "speakers". These shrimp are ambush predators that use the finger of their claw to stab/hold/kill soft prey. The 2nd group said hey, why just stab?? The "smashers" use the heel of their claw as a club to shatter the shells of their prey! Our peacock mantis shrimp? They're a smasher! One of the fastest strikers in the animal kingdom, they pack a punch that peaks at speeds over 50 mph. #2024MMM isn't Mantis Shrimp's first rodeo either: Mantis Shrimp showed off its one-two punch in #2018MMM by smashing alligator snapping turtle's beak!



Mandarin fish (*Synchiropus splendidus*) or mandarin dragonet might be called "little dragons" because of their showy exterior, but they don't actually have a key feature of many fish and

# R1: RAINBOW COLLECTION

mythical dragons: scales! Instead of scales, mandarin fish are covered by BOTH a thick layer of noxious, antimicrobial slime and tiny, toxic spines. This protects them against parasites and predators alike: the former can't break in, and the latter can't stand the taste. Oh, and also the mucus it's covered in is apparently quite stinky.



Luc Viatour / Wikimedia Commons / CC BY-SA 3.0

Now, what happens when an unstoppable force meets an in-mucus-able object?? Our sympatric combatants meet in the warm waters of Iriomote-Ishigaki National Park, Japan. Sekisei lagoon is home to the largest coral reef in Japan, as well as the northernmost reefs in the Pacific. There's a beautiful coral reef, teeming with fish. A 3 inch (0.22 stoat lengths) Mandarin Fish starts to stir at the reef's base - these slow-moving fish are shy and prefer to forage for their CRUSTACEAN PREY at the base of the reef. The Mandarin Fish "walks" along the reef floor on his large fan-like pelvic fins and near an inconspicuous burrow. A 7inch long (0.52 stoat lengths) Peacock Mantis Shrimp calls the u-shaped burrow home. The male Mantis Shrimp is a vibrant array of colors that

includes bright blue-green abdominal segments, paired with brilliant orange legs and striking, leopard-like spots on its front carapace. One of Shrimp's independent eye stalks swivels toward the direction of Mandarin Fish. Mantis Shrimp lets out a low vibration, telling the potential intruder to back off.

Mandarin Fish keeps moving along. His iridescent blue base coloration, swirly orange stripes, and long first dorsal spine is normally more than sufficient to warn off predators. In fact, it is one of only two vertebrate species known to have a true blue cellular pigment - most "blue" animals actually reflect specific wavelengths of light and trick the eye into seeing blue. However, Mantis Shrimp's vision is so advanced that they discriminate between wavelengths less well! They have a minimum of 12 photoreceptors (humans have 3!) and see such a large spectrum of color that the differences between colors are too small to detect! Warning coloration (aposematic) means less when you can see between the rainbow's lines... Mantis Shrimp fixates on Mandarin Fish. His preferred prey isn't normally this squishy. Mandarin Fish keeps shuffling, closer and closer to the burrow. POW! In an instant, the eviscerated cyanophores disperse into the blue of the ocean, as the area above the burrow is covered in red. The pungent odor gently fades away as Mantis Shrimp heads back into its well-defended burrow. MANTIS SHRIMP DEFEATS MANDARIN FISH!!!!  
Narrated by Mauna Dasari.

# R1: RAINBOW COLLECTION

**Marbled Polecat (4) Madagascan Sunset Moth (13)** – Marbled Polecats (*Vormela peregusna*) are in the Mustelidae family and can weigh nearly as much as 1.5-3 stoats -- their close cousin! Males tend to be larger than females, but it's not that big of a difference. The polecat gets its name from its beautiful golden yellow coat with dappled brown, black splotches on its back. It shares a colorful coat with skunks and honey badger, and similarly is used to warn others about their STINKY anal glands and aggression.



Kudaibergen Amirekul / Wikimedia Commons / CC BY-SA 4.0

Madagascan Sunset Moth (*Chrysidia rhipheus*) is a medium-sized moth with beautiful IRIDESCENT wings and a wingspan at 1 stoat tail in length (3.5 in). Unlike other moths and butterflies, the sunset moths' colors are caused by LIGHT INTERFERENCE from micro-structures rather than pigment! The scales on its wings have layers of cuticles and air with different thickness to make them SHINE.

Tonight's battle occurs in the Gurbantünggüt Desert in northern China, located on the outskirts of the



Bernard Dupont / Wikimedia Commons / CC BY-SA 2.0

Marbled Polecat's wide home range from southeastern Europe to northern Asia. There, the Polecat has just emerged from its den that USED to be the burrow of a great gerbil (*Rhombomys opimus*) ... until it was lunch! However, it's been a little while since it's last delicious gerbil, so Polecat is on the prowl yet again as dusk begins to fall. Meanwhile, Sunset Moth was surrounded by thousands of its friends as they prepare to migrate across the island for more of the delicious Omphalea vine. They've eaten this toxic plant as larvae, and the toxins are stored in their body for their ENTIRE LIVES.

SUDDENLY, Sunset Moth is FREEZING and ALONE in... a desert as it has been MMMagically transported to the Gurbantünggüt Desert! As Sunset Moth tries to land on the sand atop a small dune, its iridescent wings shine in the setting sun and catches the eye of Polecat at the bottom of the hill. Polecat dips behind a small shrub between itself

# R1: RAINBOW COLLECTION

and what it believes to be a bright-colored bird. Polecat creeps closer, using the setting sun and its dappled coat to mask its movement, closer... closer...

BAM! POLECAT TACKLE ROLLS THE MOTH DOWN THE DUNE CRUSHING THE MOTH'S WINGS! Eagerly, POLECAT takes a bite out of the toxic Sunset Moth...



And MEHHHH! Polecat gets a mouth full of moth, but the toxins aren't bad to this mustelid's taste -- JUST BLAND! Crushed and bitten, Moth's sparkly eyes dim... as Polecat continues hunting. POLECAT CRUSHES SUNSET MOTH!!! Narrated by biologist Gretchen Andreasen.

**READ ALL ABOUT IT** by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates

 **Jessica Popescu**  
@JessPopescu

#2024MMM

RAINBOW COLLECTION

EMOJI BATTLE:



7:04 PM · Mar 18, 2024 · 96 Views


 **Human Person** @radiationmouth · 28m  
Wait? WHAT! NOOO! #2024MMM

 **gretchen andreasen** @midwesternmouse · 29m  
Eagerly, POLECAT takes a bite out of the TOXIC sunset moth... #2024MMM

 **Human Person** @radiationmouth · 26m  
GRETCHEN WHAT ARE YOU TRYING TO DO TO ME IM ALREADY ON EDGE FROM THE FIGS! #2024MMM

 **gretchen andreasen** @midwesternmouse · 27m  
And MEHHHH! The polecat gets a mouth full of moth, but the toxins aren't bad to the the mustelid -- JUST BLAND! (Cash 1908) #2024MMM  
[Show this thread](#)

2 1 11 321

 **Jem** @little\_jems  
BREATHE RADMOUTH, BREATHE! #2024MMM

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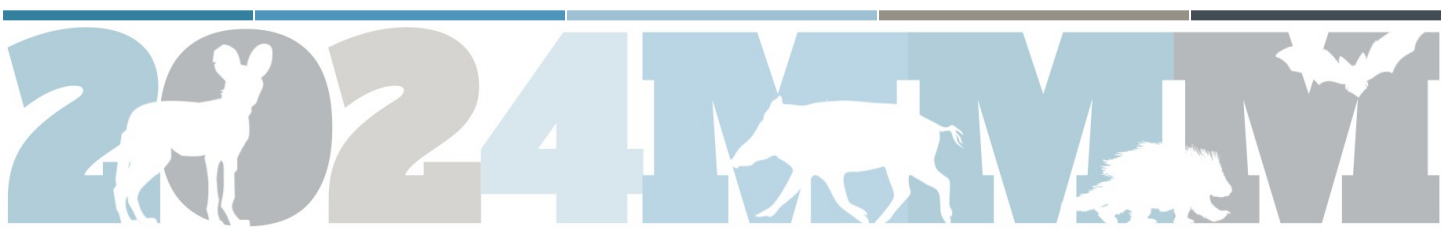
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*"In nature, nothing is perfect and everything is perfect. Trees can be contorted, bent in weird ways, and they're still beautiful."*  
-Alice Walker



# COMBATANT ARTWORK

THANK  
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ART  
teaMMM!



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# CURRENT BRACKET

OFFICIAL RESULTS



English Bracket v1.0

**ALL TOURNAMENT INFO:**  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
**NOTE: MMM includes many non-mammal species**

EPIC ANIMALS

Your Name Goes Here

Sperm Whale	1	<b>Sperm Whale</b>							
Schizomid	16								
Raven	8	<b>Raven</b>							
Albatross	9								
Stag	5	<b>Stag</b>							
Starling	12								
Wolf	4	<b>Wolf</b>							
Mouse	13								
Boar	6	<b>Boar</b>							
Indian Grey Mongoose	11								
Tiger	3	<b>Tiger</b>							
Catfish	14								
Lucy	7	<b>Lucy</b>							
Bigeye Houndshark	10								
Giant Squid	2	<b>Squid</b>							
Tarzan Chameleon	15								

<b>WILD CARD WINNER</b> 1 POINT		<b>ROUND 1 WINNERS</b> 1 POINT		<b>ROUND 2 WINNERS</b> 2 POINTS		<b>ROUND 3 WINNERS</b> 3 POINTS		<b>ROUND 4 WINNERS</b> 5 POINTS	
				"Sweet 16"		"Elite Trait"		"Final Roar"	

Rainbow Grasshopper	1	<b>Spider</b>							
Painted Wild Dog	16	<b>Painted Wild Dog</b>							
Wild Card Winner									
Himalayan Monal Pigeon	8	<b>Pigeon</b>							
Nicobar Pigeon	9								
Halloween Crab	5	<b>Halloween Crab</b>							
Bornean Rainbow Toad	12								
Marbled Polecat	4	<b>Polecat</b>							
Madagascar Sunset Moth	13								
Peacock Mantis Shrimp	6	<b>Mantis Shrimp</b>							
Mandarin Fish	11								
Wolf's Mona Monkey	3	<b>Monkey</b>							
Flat Lizard	14								
Golden Headed Lion Tamarin	7	<b>Moth</b>							
Mottled Cup Moth	10								
Red-shanked Douc	2	<b>Douc</b>							
Rainbow Scarab	15								

RAINBOW COLLECTION

CONNOISSEUR CRITTERS

Kob	1	Kob							
Bee-eater	16	Bear's Head							
Squirrel	8	Chestnut-headed Bee-eater							
	9	Hairy-legged Bee							
Lily	5	Tufted Ground Squirrel							
	12	Wichira Mountains Pillsnail							
Batfly	4	Koala							
	13	Cobra Lily							
Porcupine	6	Fork-marked Lemur							
	11	Batfly							
Pitcher Plant	3	Porcupine							
	14	Velvet Worm							
Skua	10	Northern Short-tailed Shrew							
	2	Great Skua							
	15	Parasitic Guest Ant							

1 Northern Elephant Seal									
16 Asian Cornborer Moth									
8 Opossum									
9 Hognose Snake									
5 Pronghorn									
12 Wrinkle-faced Bat									
4 Leatherback Sea Turtle									
13 Singing mouse									
6 Howler Monkey									
11 Swamp Nightjar									
3 Great White Shark									
14 Elegant Dancing frog									
7 Coral Snake									
10 Flame Bowerbird									
2 Forest Elephant									
15 Honey Bee									

TAKE A BOW

English Bracket v1.0

ROUND 5 WINNERS 8 POINTS

CHAMPION 13 POINTS

ROUND 4 WINNERS 5 POINTS "Final Roar"

ROUND 3 WINNERS 3 POINTS "Elite Trait"

ROUND 2 WINNERS 2 POINTS "Sweet 16"

ROUND 1 WINNERS 1 POINT

WILD CARD 1 POINT / 1

ROUND 1 1 Point Each / 32

ROUND 2 2 Points Each / 32

ROUND 3 3 Points Each / 24

ROUND 4 5 Points Each / 20

ROUND 5 8 Points Each / 16

CHAMPION 13 Points / 13

Total / 130 max

MMM created and directed by Professor Katie Hinde, Arizona State University

Layout by Asst. Prof. William Nickley, The Ohio State University  
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Typeset in Louisiana Nlu Pro. Designed by Bruno Jara & Luciano Vergara. From Lathotype Foundry.



And a big THANK YOU! to our friends over at the Denver Museum of Nature & Science for their \*incredible\* [MMMusic Video!](#)



PENGUIN CLASSICS

## MARCH MAMMAL MADNESS

*All the World's a Stage*  
Take a Bow Division

In Shakespeare's *As You Like It*, Jaques begins a monologue with "All the world's a stage" if you will indulge me in mixing division metaphors. Tonight, from a tantalizing courtship dance to demonstrations of intimidating power, from a waggle dance to reveal food location to a tricky paents's feeble cries as he drags a "broken" wing to lure a predator away from his clutch of eggs vulnerable in the nest, many animals are peak performers. Get ready to applaud these showboats in the **TAKE A BOW DIVISION!**

**Northern Elephant Seal (1) vs. Asian Cornborer Moth (15)-** Our number 1 seed is the Northern Elephant Seal (*Mirounga angustirostris*). Spending most of their time on the open sea, male Northern Elephant Seals arrive on beaches from the Gulf of Alaska down to Baja California in late November-early December to stake their claim. They battle other males for beach dominance until the breeding season in late February and March. While physical confrontation does occur, elephant seal "dominance hierarchies are established and maintained primarily by stylized visual and vocal threat displays" (Shipley et al. 1992). They rear up and ROAR to intimidate rivals.

Grendelkhan / Wikimedia Commons / CC BY-SA 4.0



The Asian Cornborer Moth (*Ostrinia furnacalis*) is a nocturnal insect native to Asia and Southeast Asia and shows singing behavior! In 2009, Nakano and colleagues reported "Moths are not silent, but whisper ultrasonic courtship songs." Asian cornborer courtship songs induce female freezing behavior and increase the likelihood of

# R1: TAKE A BOW DIVISION

successful courtship. Freezing responses to ultrasound by moths are originally an antipredator reaction to echolocating insectivorous bats.

Kembangraps / Wikipedia Commons / CC0 1.0



Tonight's battle takes place on the beaches of Guadalupe Island. Northern elephant seals were thought to be extinct by 1884, until a remnant population of eight individuals was discovered on Guadalupe Island in 1892. Our Asian Cornborer Moth combatant is transported to the sands of the island - within the territory of a bull Elephant Seal. As a potential rival appears near the territory boundary, our bull Elephant Seal rears up to deliver an intimidating roar of dominance that sends the Cornborer Moth into a flight turbulence wing-spin, somersaulting through the air... and off the field of battle! NORTHERN ELEPHANT SEAL WHOOSHES CORNBORER MOTH! Narrated by Prof. Chris Anderson.

**Leatherback Sea Turtle (4) vs. Singing Mouse (13)** - Scientific binomial (aka standard) names can tell us a lot about an organism. For Leatherback Sea Turtle (*Dermochelys coriacea*), the genus/species name describes a leather-skinned

turtle: Greek words derma = skin/hide and chelys = tortoise/turtle + Latin coriaceous = of leather. Leatherbacks live most of their lives in tropical, temperate & subarctic oceans, returning to steep, coral-free tropical beaches to lay their eggs. When hatching, Leatherback babies vocalize, which has been hypothesized to help the young coordinate their emergence into the world.



The standard name for Singing Mouse (*Scotinomys teguina*) tells us about its appearance: *Scotinomys* = dark mouse and habitat: *teguina* = concealed by grass. They live in montane cloud forests (~3,600-9,700 ft) from southern Mexico to Panama. Singing Mice communicate using scent and song. The complexity of their vocal communication has led neuroscientists to study them as a model system to reveal insights into human speech & cognition.

Tonight's battle is in Cape Canaveral, Florida, where thanks to conservationists and the US Air Force Leatherback nesting increased by 14%! Our 2,000 lb female combatant is excavating her nest

# R1: TAKE A BOW DIVISION



with her front and rear flippers. SWOOSH! Our extremely bold and virile male Singing Mouse is in the cloud forest in Costa Rica, on the edge of two female singing mouse territories, serenading them both when he is transported by MMMagic to Leatherback nesting site. As Leatherback completes the final scoop of her nest chamber Singing Mouse somersaults into the hole, just as Leatherback's first pulse of 40 eggs is released PFFFFFTTTTTT!!!! PLOP! PLOP! PLOP! Our bold Singing Mouse isn't phased by this disruption. Motivated by androgenic and stress hormones, he scurry-climbs atop the egg pile to continue his swan song. Leatherback releases the remainder of her clutch - 40 more eggs - with a mass equivalent to 246 singing mice. LEATHERBACK CRUSHES SINGING MOUSE! Narrated by Dr. Tara Chestnut.

**Howler Monkey (6) vs. Swamp Nightjar (11)** – Colombian Red Howler Monkeys (*Alouatta seniculus*) have reddish brown fur and stubby gray noses. Males can weigh up to 17 lbs and have bodies ~2.5 ft long not counting their grasping

(prehensile) tail! Howler monkeys have voice boxes with an enlarged hyoid bone to make their distinctive territorial roars thus earning their spot in the Take A Bow Division.



Unlike the arboreal monkey, the Swamp Nightjar (*Caprimulgus natalensis*), is much more down to earth, literally! They tend to roost on the ground with their feathers taking a scaly appearance. The bird comes in at 10 inches and approximately 2.5 oz. During the nesting period, when swamp nightjars incubate eggs, the male swamp nightjar will perform a "broken wing display" feigning injury to lure terrestrial predators away from the vulnerable eggs.



# R1: TAKE A BOW DIVISION

Our combatants meet in the lower montane wet forest of the on the eastern slope of the Central Cordillera of the Colombian Andes, home habitat of the Howler Monkey. Howler Monkey and his family are preparing to settle down for the night, moving through the forest toward a preferred sleeping tree, using their grasping tail as a "5th limb" to safely clamber through the branches of the canopy. Over the course of the day, Howler Monkey ate 3 distinct meals, with 2 hour naps following each meal. Howler Monkey had an especially dramatic day, as his troop and the neighboring troop converged on a fruiting Fig tree, triggering a midday ROAR BATTLE over the precious figs.

MEANWHILE in the woodland grasslands of Odzala "at the northern limit of the grassy plateau of the middle Congo," the nocturnal Swamp Nightjar sits on a clutch of recently laid eggs, vigilant for predators (Dowsett-Lemaire 1997). Male Howler Monkey and his family have settled on the lowest, largest branches of a massive tree. Male Howler Monkey sits with his back against the trunk while the rest of his family cuddles in a single group nearby. MMMagic translocates the Swamp Nightjar to the branch adjacent to male Howler Monkey! CHOP CHOP CHOP!!!!

The Swamp Nightjar is making its signature nocturnal call "CHOP CHOP CHOP"!! Male Howler Monkey and family instantly startle at the strange, squatty bird in their midst... and the bird seems to be falling to pieces?! IT'S MARCH & SWAMP NIGHTJAR IS MOULTING!

Howler monkeys "invariably" choose to sleep on the lowest branches and this branch just became one too many crowded. Male Howler Monkey hustles his family away from Swamp Nightjar to another sleep tree in the forest! Swamp Nightjar pounces on a tasty insect! SWAMP NIGHTJAR DISPLACES HOWLER MONKEY!!! Narrated by Profs. Katie Hinde and Mallika Sarma.

**Great White Shark (3) vs. Elegant Dancing Frog (14)** - The Great White Shark (*Carcharodon carcharias*) are the world's largest predatory fish and can live up to 70+ years in temperate and tropical coastal waters and continental shelves worldwide. Named after their white underbellies, great white sharks' topsides can be brown or gray, camouflaging them when viewed from above. Females can grow bigger than males, with the largest up to ~6m long.



The Elegant Dancing Frog (*Micrixalus elegans*) is a diminutive amphibian endemic to the Western Ghats in India, between the states of Karnataka and Kerala (Mal Sarma's motherland!).

# R1: TAKE A BOW DIVISION

Well-camouflaged for their environment, elegant dancing frogs are reddish-brown with scattered yellowish gray spots, dark brown bands on their limbs, and a dark blackish-brown on the sides of their head. Little little, these frogs are no bigger than an inch long. Elegant dancing frogs get their name for their courtship dance to impress females. Many frog species use croaking (sound-based) performance during the mating season, but in their noisy habitat these frogs use the visual art of DANCE!



Tonight we find Great White Shark eating her recent fur seal kill. Around her, ocean water is tinged red with blood as seabirds gather for tasty morsels of marine mammal fat... but seabirds aren't the only animals interested in the carcass. Nearby a smaller great white shark is drawn to the blood trail, looking to exploit the meal. Great White Shark tail flaps to socially signal her possession of the seal carcass. MEANWHILE, on the Honey Valley Estate, Karnataka, male Elegant Dancing Frog performs his display, extreme even among foot-flagging frogs, extending BOTH his hind limbs above his head while rotating them backward in an arc" when MMMagic transports Elegant Dancing Frog atop the Great White

Shark's seal carcass! Great White Sharks broad, serrated teeth gouge chunks of flesh from large prey, violently bobbing the fur seal carcass in the water! The hurky-jerky carcass TUMBLES Elegant Dancing Frog into Great White Sharks maw!! WHITE SHARK EATS ELEGANT DANCING FROG! Narrated by Profs. Mallika Sarma and Katie Hinde

**Virginia Opossum (8) vs. Eastern Hognosed Snake (9)** – Opossums are the only marsupials in North America. Virginia Opossum (*Didelphis virginiana*) has a 40cm long body covered in thin gray fur, and a hairless 28cm long tail. Opossums can weigh anywhere from 2 to 3.5kg – with urban individuals getting 37% larger! Opossums' thespian skills are so great, their signature move has become a saying: "playing possum". This comes from their convincing performance of death feigning, to discourage predators.



Eastern Hognosed Snakes (*Heterodon platyrhinos*) are very variable in color and pattern, yet they are clearly distinct thanks to their upturned, blunt nose, which helps them burrow through the soil.

# R1: TAKE A BOW DIVISION

Hognose snakes are masterful actors. When threatened they first bluff, changing shape to look bigger while hissing and striking. After that they perform death feigning, to discourage predators. (déjà vu?).



Our combatants meet in Babler Memorial State Park. The 988ha park, just outside St. Louis, MO, is home to BOTH Opossum and Hognose Snake! This early spring evening, we watch as both critters forage among bushes near the edge of a grassy field, unaware they are nearby. Suddenly noticing each other, Snake and Opossum both go into anti-predator performances! Opossum hisses with large open mouth, while Hognose snake hisses right back! Hognose snake quickly sucks in air to expand its body while flattening ribs near the head thanks to hinge-joints. Looking hooded like a cobra, Hognose raises its head, hissing loudly and striking at Opossums' face – just like a rattlesnake! Opossum doesn't fall for the bluff! Opossums are highly resistant to snake venom, surviving 60x the lethal dose of diamondback rattlesnake venom!! In fact, opossums will eat most venomous snakes! It's bluff called, Hognose

snake moves to the backup plan! It begins to writhe on the ground violently, thrashing its tail wildly! Finally, it goes still, belly up with tongue sticking out of its mouth! Is this enough to trick the trickster Opossum??

HOLD ON, A FRISBEE JUST FLEW INTO THE BUSHES!!! A FRISBEE HAS ENTERED THE FIELD OF BATTLE!! FOLLOWED BY A... YEP IT'S A BORDER COLLIE MIX FOCUSED ON CATCHING HER FRISBEE... Oh no! The border collie COLLIDES with Opossum as she leaps to catch her Frisbee... Ok, border collie is now racing her Frisbee back to her person and Opossum... ah yep, as expected... The canine collision has triggered Opossum to Play Possum! Bending head towards its belly, Opossum tenses all its muscles and falls on its side. Completing the show, Opossum defecates, ensuring that no predator would risk an unpleasant bite. Sooo... ummm... ah... both combatants are motionless on the field of battle.



# R1: TAKE A BOW DIVISION

<15 minutes later>

Was that a twitch!?! Did the Opossum just move?!? No twitching. Opossums playing dead is not just great acting. Known as tonic immobility, stress levels trigger hormonal responses, rendering opossums catatonic and unable to respond to stimuli until recovered from the catatonic state. Inside the Hognose Snake, however, hormone levels appear normal. Death-feigning in Hognose appears to come from innate nervous reflexes and not responses to adrenaline.

<30 minutes later>

Hognose snake slightly lifts its head, flicks its tongue, and looks around. Opossum remains fully still on the ground. Immobility length in opossums can vary with severity of the stress, but can last up to 9 hours! Hognose snakes rarely play-dead for more than 20min. Sensing the time is right to make a getaway, Hognose Snake rolls over and quickly LEAVES THE FIELD OF BATTLE!!! Leaving Opossum still motionless on the field of battle. OPOSSUM OUTLASTS HOGNOSE SNAKE!!! Narrated by Prof. Brian Tanis.

## Caatinga Coral Snake (7) vs Flame Bowerbird (10)

The Caatinga Coral Snake (*Micrurus ibiboboca*) genus name is Greek in origin, mikros = small & oura = tail. The species name 'ibiboboca' is the indigenous name given to this species in Brazil - it is not of Portuguese origin. Caatinga Coral Snakes are small, non-aggressive, but HIGHLY VENOMOUS with a typical pattern of red-black-white-black-white-black-red bands. Male Caatinga Coral Snakes engage in ritual

battles that involve aligning their bodies next to each other, entwining, twisting, rolling, and ultimately snapping their heads to force their opponent's head below their own.



Flame Bowerbirds (*Sericulus ardens*) occur in Papua New Guinea & Indonesia. Males show their fitness with bright colors, a flame red head, yellow body & black wings & tail. Similarly-sized females have olive-brown backs with orange bellies. Bowerbirds have long attracted our interest because of male bowerbirds' elaborately decorated courtship bowers. Flame Bowerbirds builds an 'avenue' style bower. Male Flame Bowerbirds bring the ladies to the yard by lining stick walls with purple fruits & flowers & the runway with yellow-brown leaves. The outside of the bower is decorated with blackish glossy leaves.



# R1: TAKE A BOW DIVISION

Tonight's battle takes place in Parque Nacional de Ubajara, in Ceará State, Brazil. "Caatinga" is a Tupi word meaning "white forest" which describes the dry shrubland and thorn forest.

At home, Flame Bowerbird combatant is a striking male weighing in at ~160 grams. After gorging on fruits, he is scoot-kicking the duff on the forest floor when the #MMMagic portal transports him to the Caatinga habitat. Our Caatinga Coral Snake is slowly weaving it's way across the forest floor along the edge of a trail & coils in response to the sudden appearance of the scoot-kicking Bowerbird. Nearby a group of tourists is on a wildlife tour. Jack, a 27 year-old from the US, sees what he thinks is a harmless milk snake because of the childhood rhyme "red & yellow can kill a fellow; red & black, friend of Jack" not knowing that rhyme applies to coral snakes in the United States, but not ALL coral snakes!

Jack picks up Coral Snake to show his pals WHEN THE CORAL SNAKE DEFENSIVELY VEMON-STRIKES JACK'S FOREARM! #NotYourFriendPal. Bowerbird watches the action from a low-hanging branch. Jack's bite site starts tingling with a growing numbness & waves of intense pain. Coral snake neurotoxic venom can cause respiratory paralysis in mammals, including rarely in humans! The tour guide and a park ranger converge on Jack! The tour guide organizes a medical evacuation. The park ranger identifies the snake & radios ahead about the needed antivenom to medical personnel! The park ranger, trained with proper snake handling methods and with proper equipment, catches the snake to relocate it

further from the tourist trail, as the tour group continues with a replacement guide on their wildlife tour & emphatic instructions to stay on the trail! Bowerbird flits to the ground to collect the most beautiful light purple-ish flower he's ever seen to add to his bower, a mimosa. BOWERBIRD DEFEATS CORAL SNAKE! Narration by Dr. Tara Chestnut.

**SO YOU THOUGHT A POEM WAS THE BEST WAY TO LEARN GLOBAL SNAKE SAFETY**



**Pronghorn (5) vs. Wrinklenosed Bat (12) -** Pronghorn (*Antilocapra americana*) is not actually an antelope but is the closest relative of giraffe and last year's almost champion Okapi! Pronghorn males are larger than females and can weigh up to 70kg. Male pronghorns have numerous display behaviors, both to court their ladies and to defend their territory against encroaching males. A go to move is the SPUD. a stylized sniff- paw- urinate-defecate sequence. Pronghorns confront interlopers by lowering their heads, depressing their ears and walking 15-25 m of intruding bucks; the walk then becomes a slow, stiff deliberate gait ending in a broadside threat. "Do you turn your

# R1: TAKE A BOW DIVISION

side to me sir? I do but turn my side."



Alan D. Wilson / Wikimedia Commons / CC BY-SA 3.0

If you've ever imagined what a prune and bat would look like if they were combined, meet the Wrinklenosed Bat (*Centurio senex*)! These fruit-eaters are aptly named for their short and wrinkled faces, with strong jaws adapted for biting hard figs and seeds. Males have more pronounced wrinkles and a skin fold on their chin. These masked seducers pull the skin over their face while hanging from a branch, flapping their wings, and chirping to impress visiting females.



Jplevraud / Wikimedia Commons / CC BY-SA 3.0

The setting sun glows golden behind the Teton Mountains as a small herd of pronghorn make their way near Antelope Flats, a stopover point of their spring migration. At the head of the herd is our dominant male Pronghorn, tongue flicking to his ladies. In the deep snow, the pronghorn travel single file, not to hide their numbers, but so that the following does and juveniles conserve energy by following the path of others. Meanwhile, amidst the buzzing calls of cicadas in the muggy, humid forests of Belize, our Bat is just waking up in his cozy vine roost. He stretches a delicately patterned wing, ready to take flight just as the MMMagic translocation takes hold dropping him on a wooden fence post, being blasted by the cold, stiff breeze of Wyoming! Wrinklenosed Bat pulls his mask up his fast against the chill and wraps his wings in tight. The appearance of Wrinklenosed Bat causes Pronghorn to stare at the disturbance and alarm snort, "an explosive forcing of air through the nostrils, which the Klamath Indians described as "Cha-oo" (Kitchen 1974), but Pronghorn quickly infers no danger from Bat.

Pronghorn moves towards the fence and fencepost occupied by the Bat, eyeing a small cluster of shrubs just on the other side that would make a great wind break and sleep spot for the group to curl up and clump slumber party. Pronghorn do not typically jump fencing, preferring instead to crawl under wire fencing. Pronghorn bows down and begins to squirm under the fence wire. He successfully ducks his head under and is moving forwards. Pronghorn erupts in a loud pain vocalization! This barrier has not yet been updated

# R1: TAKE A BOW DIVISION

with pronghorn-safe fencing and the sharp metal barbs of the lowest wire gouge deep lacerations in the Pronghorn's back! Startled by the Pronghorn's cries of pain, Bat takes flight, seeking a quieter (and warmer) spot exiting the FIELD OF BATTLE. PRONGHORN OUTLASTS WRINKLENOSED BAT! Drops of blood roll down Pronghorn's tan back to drip into Wyoming's white snow. Narrated by Dr. Alyson Brokaw and Prof. Katie Hinde.

**Forest Elephant (2) vs. Honey Bee (15)** - Forest elephants (*Loxodonta cyclotis*) can weigh up to 6000 kg! They eat leaves and trunkfuls of fruit. These "Megagardeners" of the forest eat more seeds from more species than most large verte-

brates. Their extinction would be catastrophic for the whole environment. Forest elephants, like savanna elephants, communicate with "rumbles" / infrasonic low-frequency tonal vocalizations at 15–25 Hz with individual signatures that can travel relatively great distances allowing coordination from afar. The Elephant "vocal repertoire" can express their emotional state and includes sounds of excitement (Roar, Mating Pandemonium, Play Trumpet) and fear or injury (Scream, Bellow, Groan, Trumpet Blast, and Snort).

Honey bees (*Apis mellifera*) are widely distributed throughout Afro-Eurasia with many sub-species, including *Apis mellifera adansonii* known for its



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# R1: TAKE A BOW DIVISION

rapid and highly aggressive swarming in defense of their hive. Honey bees are ~0.15 grams (1 elephant = ~68 million bees). As bees forage for pollen and nectar, they assist plant reproduction by delivering pollen while visiting many plant blooms throughout the day. Honey bees live in colonies of queens, workers, and drones.

Ivar Leidus / Wikipedia Commons / CC BY-SA 4.0



Tonight's battle occurs in the 'Gamba Complex of Protected Areas in SW Gabon, consisting of two national parks (Loango and Moukalaba-Doudou) that are divided by an industrial corridor called the Rabi-Ndogo Protected Area where oil companies operate. This lowland tropical rain forest supports one of the largest remaining forest elephant populations, and is home to hyrax, pangolin, chimpanzees, gorilla, red river hog, bush buck, mongoose, leopards and honey bees.

Approaching sunset, a massive Bull Forest Elephant is foraging on fruit in the forest. Nearby, two other forest elephants forage, as they socially forage together. Nearby in the forest, combatant Honey Bee, *Apis mellifera adansonii*, has discovered a smorgesboard of nectar 67m from the hive. Honey Bee rapidly zigzag flutters above the Bull Elephant to reach the hive to alert the fam!

The massive bull Forest Elephant poops. His companions poop too, as forest elephants are inclined to synchronously defecate. Bee is one of the last foragers to return to the hive and she presents her waggle dance to indicate the location of nectar. If the nectar had been much closer, her waggle dance would have involved round dance and sickle dance elements as well.

A hard rain begins to fall, March is the rainiest month here, and Bull Forest Elephant steps closer toward the fallen fruit at the foot of a bitterbark tree (*Sacoglottis gabonensis*)... THE LOCATION OF THE BEEHIVE! Inside the hive, Honey Bee's companions are not excited by the nectar report and are disinclined to forage on a dark and rainy night. Still, the hive is still ABUZZ as most every worker returned from daily foraging. Bull Forest Elephant, eager for bitterbark tree fruit, abruptly stops as another sound permeates the patter of the rain... A BEEHIVE! Bull Forest Elephant rumbles, listening to the buzzing of the currently undisturbed bees... but also detects that this colony has an active well-established queen cell producing many bees. Rich memories triggered by sound (and possibly smell) bring forth memories of the past for the Forest Elephant!

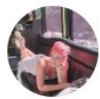
FOREST          ELEPHANT          FLASHBACK  
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*A young Bull Forest Elephant feeding on a tree disturbs a beehive. Aggressive bees pouring from the nest within a minute! BEES STINGING HIS EYES!!! Elephant goes berserk, thrashing, spinning, & screaming!*

# R1: TAKE A BOW DIVISION

Having learned his lesson long ago, Forest Elephant slowly gives the beehive a wide berth and shows why BEE-AVERSION may be a key to reducing elephant-human conflict where wildlife habitat meets agriculture. Bull Forest Elephant and his companions travel to visit another known bitterbark tree in the forest BEYOND THE FIELD OF BATTLE! HONEY BEE OUTLASTS FOREST ELEPHANT! Narrated by Profs. Marc Kissel and Katie Hinde.

READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates



**Jessica Popescu**  
@JessPopescu

#2024MMM

TAKE A BOW ROUND 1  
EMOJI BATTLE



7:29 PM · Mar 20, 2024 · 5 Views



**Jem @little\_jems** · 17m  
\*Waits on edge of seat\* #2024MMM



**Spencer Johnson** 🇵🇷 @deathbymustelid · 15m  
Replying to @MarcKissel  
It's gonna be so funny if you teed it up like this and the honeybee gets squished in eight seconds #2024MMM



**Mrs Roy** @MrsROYGBIV · 5m  
While I'm not thrilled with this #2024MMM outcome, I'd turn away from the 🐝 also



**Laurie (Gardiner) Gaughan** @LaurieGtravels · 2m  
NOOOOOOOOOOO!!! Elephant, come back! #2024MMM



**Margaret** @MargoOutside · 1m  
Wow. I love me an upset, especially for #TeamInvert but WOW. #2024MMM



CHECK OUT [MMM-themed videos](#) from AUMNH! THANK YOU!



AND a special thanks to our friends at Society for Integrative & Comparative Biology for their essay on the worst-seeded combatants! [Check it Out!](#)

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# COMBATANT ARTWORK

THANK YOU ART teaMMM!



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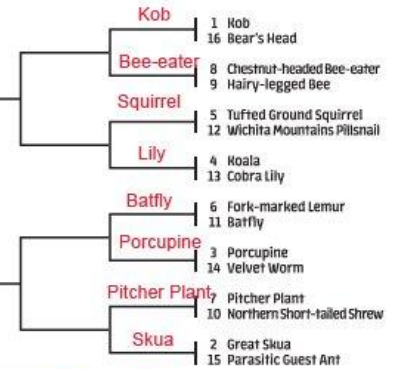


ALL TOURNAMENT INFO:  
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NOTE: MMM includes many non-mammal species

EPIC ANIMALS

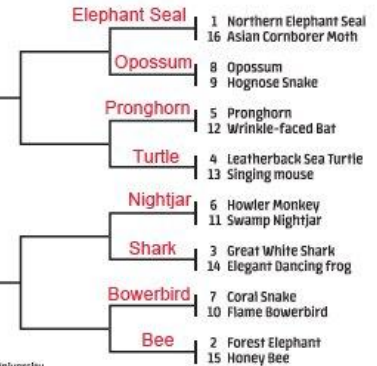


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CONNOISSEUR CRITTERS

RAINBOW COLLECTION



TAKE A BOW

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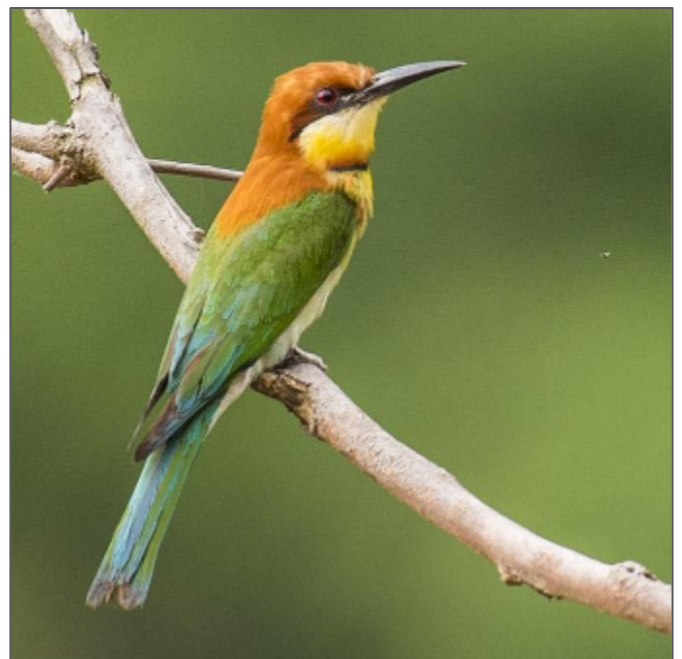
## ROUND 2 EPIC ANIMALS & CONNOISSEUR CRITTER DIVISIONS



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**Kob (1) vs. Chestnut-headed Bee-eater (8)** – Not just a connoisseur, the kob (*Kobus kobl*) is also a bovine bon viveur! Kobs are highly social, sometimes forming herds that can number in the thousands! Once kobs are in high densities, males will defend small territories with resources like salt-licks. Females then choose to mate with males with the best territories.

Chestnut-headed bee-eaters (*Merops leschenaulti*) are also gregarious gastronomes. They typically gather in small colonies of 4-8 breeding pairs, feeding and nesting together from February to April. Chestnut-headed bee-eaters form colonies based on peer aggregation and not habitat quality. Evidence suggests these peer groups help with spotting and deterring predators.



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## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

Kob keeps home-habitat advantage, so the combatants meet in the Borgu Sector of Kainji Lake National Park. Our large male Kob is defending a territory along a river filled with vegetation to nibble and a choice patch of soil to lick. Transported from a mangrove forest, the riparian forest feels similar to home for the Bee-eater, but its breeding partner and all its friends are missing! Concerned, Bee-eater suddenly swoops down and lands within the middle of a large area of exposed soil. Bee-eaters make their nests by burrowing 2 meters into the sandy-muddy banks and flat areas near rivers. With nestlings hatching in March, the Bee-eater is especially worked up. Confused about where its nest went, Bee-eater lands along the embankment.

Kob is nearby performing a “proud-gait”, a display strut with an upright head it periodically performs around its territory. Rarely needing to chase off other males, the Kob focuses on looking its best. Disturbed by the prancy-dancing Kob head-butting the ground, the Bee-eater departs the field of battle to search for its nest. Still lingering on the hoof of the hoofed mammal, Bear's Head Fungi is getting low on remnant conifer. **KOB DEFEATS BEE-EATER!!!!** Narrated by Brian Tanis.

### Tufted Ground Squirrel (5) vs. Cobra Lily (13)

– Let's talk about Squirrel's tail, shall we? Tufted Ground Squirrel (*Rheithrosciurus macrotis*) is estimated to have one of the most voluminous tails relative to body size across all mammals. Function? Unclear. But, the large tail may be used as an anti-predator mechanism. How could this work? If pounced on by a predator, large poofy

tails may not give the hunter much hold. Or, large tails could confuse a predator. Squirrel's big tail could serve other functions, but we need more research.



Cobra Lily (*Darlingtonia californica*) typically grows in serpentine soils, rich in the toxic elements nickel, magnesium, & chromium but low in essential macronutrients. Those essential nutrients, especially nitrogen, are obtained through carnivory. The cobra lily tongue or "fishtail appendage" is hypothesized to attract prey to the pitcher entrance via nectar glands, color, and short hairs. But, this hypothesis was not supported in a leaf removal experiment.



## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

Squirrel only occurs on Borneo and maintains home habitat advantage, so the combatants meet at the Cabang Panti Research Site in Gunung Palung National Park where Prof. Andy Marshall has studied Tufted Ground Squirrels. It's morning after a hard rain. Although technically a tree squirrel by taxonomy, Squirrel is primarily found on ground. Squirrel is again foraging for seeds under a canarium tree because that's what squirrels do. MMMagic transports Cobra Lily from the inhospitably dry Australia to the saturated and cool soils of Borneo. Cobra Lily's roots expand as it greedily takes in much-needed water, pumping some of that water into its pitcher in preparation for prey capture.

The abrupt arrival of Cobra Lily startles Squirrel. Cobra Lily is the right size and shape of a KING COBRA (*Ophiophagus hannah*)! King cobras are terrestrial and venomous. They can raise the anterior part of their bodies ~1.5 m high, with hoods extended, the resemblance is frightening! Although king cobras are primarily predators of other snakes, you can never be too careful? Squirrel scurries up the trunk of the canarium tree and "squirrels" at the Cobra (Lily) with vocalizations and agitated tail waves. Cobra (Lily) does not move in response to Squirrel's objections. And yet, Squirrel continues to object loudly. Cobra (Lily) again, does not move and Squirrel continues to fuss. It's a standoff!!!!

Squirrel has had enough. This aggression will not stand! Squirrel launches off the tree trunk towards Cobra (Lily)! And gives Cobra (Lily) a wide berth as Squirrel EXITS THE FIELD OF BATTLE! COBRA LILY OUTLASTS SQUIRREL! Narrated by Jessica Light.

**4-seed Wolf (4) vs. Red Deer Stag (5)** - A night-time series of recordings in the Bolshebereznykovsky, Chamzinsky, Dubensky, & Atyashevsky districts of the Republic of Mordovia revealed a wolf (*Canis lupus lupus*) howling in reaction to Eurasian eagle owl hoots. The Wolf and Eagle Owl co-vocalizations lasted 4 minutes, and the owl was thought (by the researcher) to be an irritant to the wolf. Dogs and fox also co-vocalize with eagle owl hoots! "There is an opinion that when the cry of an owl or the howl of a wolf is heard in the forest, all other birds and animals calm down. In forests of Eurasia, these two predators can be at the top of the vocal hierarchy among birds and mammals, respectively" (Andreychev 2023).



During the mating season Red Deer Stags (*Cervus elaphus*) produce roars. Common Roars accurately signal the Stag's size, which is a factor in their ability for male-male combat, and allows the competitor to assess the risk of engaging in a fight.

## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS



But at moments of *\*intense\** competition, Red Deer Stags produce a more chaotic "Harsh Roar" that is more likely to intimidate their rivals and causes ladies to pay more attention.

Tonight's battle occurs in the Carpathian Mountains, along the slopes of mountain ridges blanketed in spruce forest with smattering of birch and beech trees above the Sola River Valley along the Poland Polish-Slovakian and the Polish-Czech borders. An adult male Wolf trots alone in the forest. He is on one of his "extraterritorial forays" away from the pack as he explores opportunities to disperse and create a new pack in unclaimed territory. In the Carpathian Mountains, Wolf shares the forest with Red Deer, roe deer, & wild boar.

The deer species are more than 90% of the meat consumed by wolves, and between roe deer and Red Deer, wolves have a hankerin' for RED DEER. In the region, Red Deer are only about 20% of the ungulate population, but are 50% of the animals consumed and during the cold months Wolves are even more keen to hunt Red Deer.

In a small clearing in the forest, Stag is nibbling on some of the first shoots of spring, when out of his peripheral vision he sees Wolf trot into the clearing. Wolf slows, but continues walking toward the Stag. Red Deer Stag have several escalating responses to wolf predation risk. Step 1: Stag moves from the open with richer grazing, closer to the cover of the timberline at the edge of the clearing. Step 2: Stag positions away from environmental impediments to fleeing, such as streams choked with coarse woody debris, large boulders, or areas of many downed trees that ungulates can have difficulty maneuvering through. Step 3: Stag confronts the lone Wolf by charge...THE WOLF HAS LEFT THE FIELD OF BATTLE!

Because even when hunting cooperatively in packs in the Carpathian Mountains, Wolves rarely bring down Stags; fewer than 15% of pack kills are Stags, as wolves more successfully target does and juveniles. Our lone Wolf combatant saves his energy for more likely successes like hunting brown hare, the most common non-ungulate winter prey of wolves in the Carpathian Mountains. Stag resumes grazing. STAG INTIMIDATES WOLF!!!! Narrated by Katie Hinde.

# R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

**Crested Porcupine (3) vs. Batfly (11)** – Crested Porcupines (*Hystrix cristata*) are monogamous, with both mom and dad contributing to the care of young porcupines (called porcupettes). This includes taking turns foraging and guarding vulnerable babies at the den. Though primarily vegetarian, Crested Porcupines will occasionally feed on carrion, likely as a way to supplement their protein intake.



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Batflies (*Eucampsipoda madagascariensis*) reproduce year-round, living in the fur of both male and female Madagascan rousette bats. In the wet season, gravid female flies prefer lactating female bats who's blood is full of important nutrients. *Nycteribid* batflies like *Eucampsipoda* can also act as hosts and vectors for viruses, bacteria, even fungi.



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In the quiet darkness of a Madagascar cave, Batfly perches on the shoulder of his bat noble steed (*Rousettus madagascariensis*) and takes a sip of blood. As the bat reaches a clawed foot up to scratch at her shoulder, both are transported away by MMMagic to the Italian foothills. The late afternoon sun is shining bright here in Central Italy, home of our Crested Porcupine. Flustered, the noble steed alights onto a scrubby tree overlooking a hole in the ground. An eye glitters in the hole. It's Porcupine, standing guard! Her two porcupettes, born just a week ago, are tucked in the den behind her. With small bodies and quills still soft, they won't venture out of the den for another few weeks. Porcupine turns and BOTH eyes glitter in the darkness! While tough against insects, turns out Worm slime is water soluble and quickly dissolved, leaving Porcupine's eyes clear to spot the movement just ahead. It's a red fox on the prowl! Porcupine comes fully out of her den, crest and quills raised in warning.

In the tree above, Batfly takes another sip of blood. Noble steed scratches at her shoulder and Batfly scuttles away down her belly. The red fox continues to approach and Porcupine shakes her tail and stamps her feet in warning, the hollow quills of her producing a hiss-like rattle. But this red fox is young and hungry after the long winter. He continues to approach. Turning swiftly, Porcupine drives backwards and her razor-sharp spines pierce right into the fox's neck! Above, noble steed brings a clawed foot up to scratch at her belly - STABBING RIGHT THROUGH BATFLY! Noble steed brings the claw to her mouth and SWALLOWS BATFLY WHOLE. Autogrooming Carnage! Porcupine, alert on the field of battle, watches the fox run away dripping blood. Above her the noble steed takes wing now minus a parasite. PORCUPINE OUTLASTS THE BATFLY!!!! Narrated by Alyson Brokaw.

## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

**Sperm Whale (1) vs. Raven (8)** - Like other cetaceans, Sperm Whales (*Physeter macrocephalus*) use echolocation to navigate the vast, dark oceans. Sounds unique to Sperm Whales are "codas" which are culturally passed down in matrilineal groups and exemplify their complex social structure. Actual Living Scientist Shane Gero has been studying the behavioral ecology and social structure of Sperm whales, particularly in the Caribbean, for decades.



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Ravens (*Corvus corax*) also have vocal signals, beyond their famous CROAAK and GRONK-GRONK. Ravens are smart at solving foraging brain teasers and savvy at solving conflicts with other ravens. As evidenced last round, Ravens make a meal out of small mammals like lemmings, voles, and even other birds! Researchers saw Ravens digging into rhinoceros auklet burrows, preying on chicks, and even attacking adults. One more epic bird fact: Ravens inspired many place-names across the UK. Unfortunately, we can see the disappearance of raven habitat over time when those locales are compared with modern raven distributions.

Tonight's battle takes place in central Baffin Bay off the coast of Nunavut ("our land" in the Indigenous Inuktitut), Canada. Sperm Whale takes a break from deep-sea hunting to opportunistically feed off discards from a commercial fishing boat! Sperm Whale's foraging from commercial fishing waste is currently considered a rare behavior, but as oceans and fisheries change, this could have big implications for the flow of energy through marine ecosystems. Meanwhile, Raven is feasting on a shark carcass along the Nunavut coastline, when it is suddenly MMMagicked into the open ocean without their meal. It's a feeding frenzy at the water's surface around the fishing boat. Northern bottlenose dolphins, glaucous gulls, hooded seals, and northern fulmars all jockey for the bycatch and discarded bits tossed back into the sea. Raven is a bit surprised and takes in the whole scene while hovering above the melee of splashing and squawking.



Chris73 / Wikimedia Commons / CC BY-SA 3.0

At that moment, Sperm Whale spy hops (or sticks their head out of water) to get a better view of the

## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

boat and the source of fishy food-scrap. WHOOSH!!! Raven suddenly DIVES at the Sperm whale... And comes up with an adult black-legged kittiwake in their mouth! "Upon examining the area where the raven had lifted off, only a few neck feathers and a little blood were found." (Klicka & Winker, 1991). Raven lands on the roof of the fishing vessel's bridge with their prize, and takes a free ride with the boat further into open water, leaving the field of battle. SPERM WHALE OUTLASTS RAVEN! Narrated by Patrice Connors.

**Giant Squid (2) vs. Lucy (7)** - Scientists first photographed Giant Squid (*Architeuthis dux*) with an elaborate 1000m fishing line. Lucy (*Australopithecus afarensis*) was an adult, but she was small, standing between 1 - 1.2 m. We know she was an adult since she had her adult molars. This tells us that being 'tall' probably happened after this species evolved. But why we got taller is not 100% clear.



Giant Squid retains home habitat advantage in Round 2 and tonight we find the Giant Squid in the North Pacific, near a steep and canyoned continental slope 650 nautical miles from Osaka, Japan, off the Ogasawara Islands. In the night-time, Squid has risen in the ocean column to hunt 219 fathoms below the surface (400m, 1200 feet).

MEANWHILE, 3.2 million years ago in the Afar region of Ethiopia, Lucy is up a tree. Still breathing heavily, she has sought refuge in the tree from predatory scimitar-toothed felid (*Homotherium*)...but *Homotherium* has bound into the tree after Lucy! Climbing out to the springy, terminal branches of her refuge tree, Lucy is beyond the reach of the *Homotherium*. Some researchers have speculated that fracture patterns of the Lucy fossil suggest that falling from a tree shuffled her loose the mortal coil. Other researchers are more skeptical of the "Fatal Fall From A Tree" scenario as the fossilization process and millions of years in rock can produce fracture-like patterns long after death.

Lucy's damp fingerprints grip tight to the branch. As she scootches further out on the branch, the MMMagic portal opens on the ground beneath her. Looking down she sees a dark abyss... Lucy balances above the magic portal plunge pool. Does she fancy a swim to the twilight zone of the pelagic ocean? No, Lucy does not want to go swimming. The fossil record of *Australopithecus afarensis* shows clear adaptations for a habitual terrestrial lifestyle. As *Homotherium* jumps down from the tree, Lucy moves to a more stable branch

# R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

and forages for fruit, forfeiting the "opportunity" to experience the immediate pain of depth compression: burst ear drums and rib fracture before passing out and drowning from lack of oxygen. Meanwhile, Squid hunts on the Field of Battle. SQUID OUTLASTS LUCY!!!! Narrated by Marc Kissel and Katie Hinde



## Great Skua (2) vs. Pitcher Plant (7)

Great Skua, *Stercorarius skua*, "display their tails during pair formation & courtship" suggesting that these feathers serve a role in sexual ornamentation (Schreven & Hammer 2020). Both male & female Great Skua have elongated central tail feathers & length is associated with reproduction (earlier timing of egg-laying), but this trait is especially exaggerated in males, even though on average males are smaller than females.

The Pitcher Plant (*Nepenthes rajah*) pitcher "lid" exudes "44 volatile compounds, including alcohols, esters, ketones and sulphur-containing compounds" that are typically "present in sweet fruit and flower odours" that attract mountain treeshrews & rats (Wells et al. 2011) *Nepenthes* pitcher plants chemically detect the presence of



invertebrate prey or vertebrate poop in the pitcher & stimulates the production of the digestive enzymes that break down the meal into nutrients that plant can use.

Tonight's battle occurs at St. Kilda, a volcanic archipelago in the North Atlantic, more outer than the Outer Hebrides of Scotland! Here essential seabird nesting habitat exists within the remnants of an incredible archaeological site. A northern gannet (*Morus bassanus*), having returned to the archipelago, has been fishing off the coast and is returning toward the some of the highest cliffs in all Europe, when large female combatant Great Skua begins harrassing the gannet! Great Skua interferes with gannet's flight, grasping the gannet's wing, pulling on the gannet's tail! Gannet dislodges Great Skua with evasive maneuvers, but Great Skua attacks from above, pushing her feet down on the gannet's back until the gannet regurgitates the most recent fish meal! Fishy vomit plummets toward earth \*KERSPLATTING\* on to Pitcher Plant MMMagically transported onto the shoreline!

## R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

Pitcher Plant lays sideways in the intertidal zone, wilted, with a ripped pitcher & partially dissolved mountain treeshrew, now covered in regurgitated fish! Great Skua, having successfully achieved her aim of stolen fish dinner, lands on Pitcher Plant & begins gorging on the fishy feast! Standing on Pitcher Plant, Great Skua's beak tears into plant, going after every fishy morsel. Pitcher Plant's digestive enzymes leak away into the sand and tidal saltwater. Detecting the corpse of the mountain treeshrew inside the Pitcher Plant, Great Skua rips through the plant to scavenge the mammal carcass on the shoreline. Relaxed, Great Skua preens her feathers as the outgoing tide pulls the Pitcher Plant to sea, never to emit a fruity odor again. GREAT SKUA DEFEATS PITCHER PLANT! Narrated by Katie Hinde.



### Caspian Tiger (3) vs. Eurasian Boar (6)

Tigers' (*Panthera tigris*) roars may be unique to the individual and vary between the sexes (Dunn 2014). Roars are used for long-distance communication to announce large kills, attract mates, or summon cubs & can reach up to 3 km (1.8 mi). Felids can be divided into roarers (Pantherinae) and purrers (Felinae) & likely tied to

the anatomy of the sound-producing structures of the throat (the hyoid bone and associated muscles supporting the pharynx).



Other than laying down, grazing and rooting are some of Boar's (*Sus scrofa*) favorite activities. Smaller boars (~50 kg, 110 lbs) need to consume 4000-5000 calories/day that they get from their highly flexible, omnivorous diets. Boars have large modified canine teeth (tusks/tushes); lower tusks average ~18cm (7 in) in males. Tusks help them root, forage, and fight. Rooting (subsurface foraging) plays an important role in the ecosystem because it disrupts layers of soil.

Our battle tonight is in the deciduous forests of the Golestan National Park in Iran several hundred years ago. The last known Caspian Tiger was shot here in the 1950s. Persian leopard is the only *Panthera* remaining today in Iran. Boar is foraging... as usual, entirely unaware of the Caspian Tiger's hungry gaze affixed on him. Tigers are solitary ambush predators that stalk their prey before they suddenly rush them. Boar rubs his lips and tusks on the bark of a nearby tree to mark it with his scent, as a breeze carries the

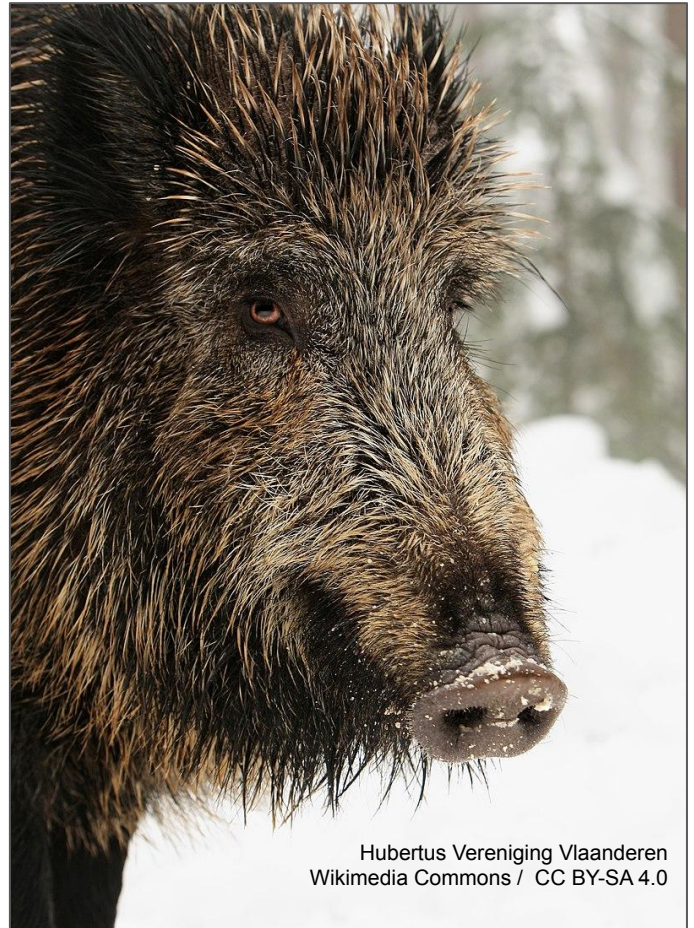
# R2: EPIC ANIMALS & CONNOISSEUR CRITTERS

the scent through the trees... but Tigers use sight and hearing to hunt, not their sense of smell (olfaction). All Felids have adaptations for night vision, members of the genus Panthera have rounded pupils that aid in daytime sight. Tiger last meal was before R1's encounter with GREEDO*i*, 8 days ago. Tigers prefer to eat every 6.5 days. While typically preferring deer, in these habitats Tiger will also target Boar.

Tiger rush-charges boar, knocking the boar down with a push from front paws. Tiger CLAWS puncture the boar's hide, as powerful JAWS try to sink CANINES into the MUSCLED NECK of the Boar! Boar rears up, a move from boar male-male wrestling, dislodging Tiger who releases his bite on Boar! Tiger comes in to crush boar's throat as Boar drops to all four hooves, slashing his lower dagger-like TUSKS upward!

<PHSSSSSLK!!!> <GOUPHF!>

Tiger GASPS as Boar plunges his TUSK into Tiger's belly! "Lacerations & penetrating injuries caused by the boar's tushes are the common injuries" (Govind & Jayson 2022) including "wounds penetrating to the internal organs" (Thalgaspitiya et al. 2023). Gruesomely wounded, Tiger crumples to the ground as bleeding Boar flees, squeal-screaming deep into the forest! Tiger gathers his remaining strength, crawling painfully across the field of battle... Tiger returns to the cover of ambush, not to hunt, but seeking refuge for any possibility of recovery. TIGER OUTLASTS BOAR! Barely. Narration by Chloe Josefson and Katie Hinde.



Hubertus Vereniging Vlaanderen  
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**Jessica Popescu**  
@JessPopescu

#2024MMM

RND 2 EPIC ANIMAL &  
CRITT CONS



7:16 PM · Mar 21, 2024 · 35 Views

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## Giant Squid vs Lucy

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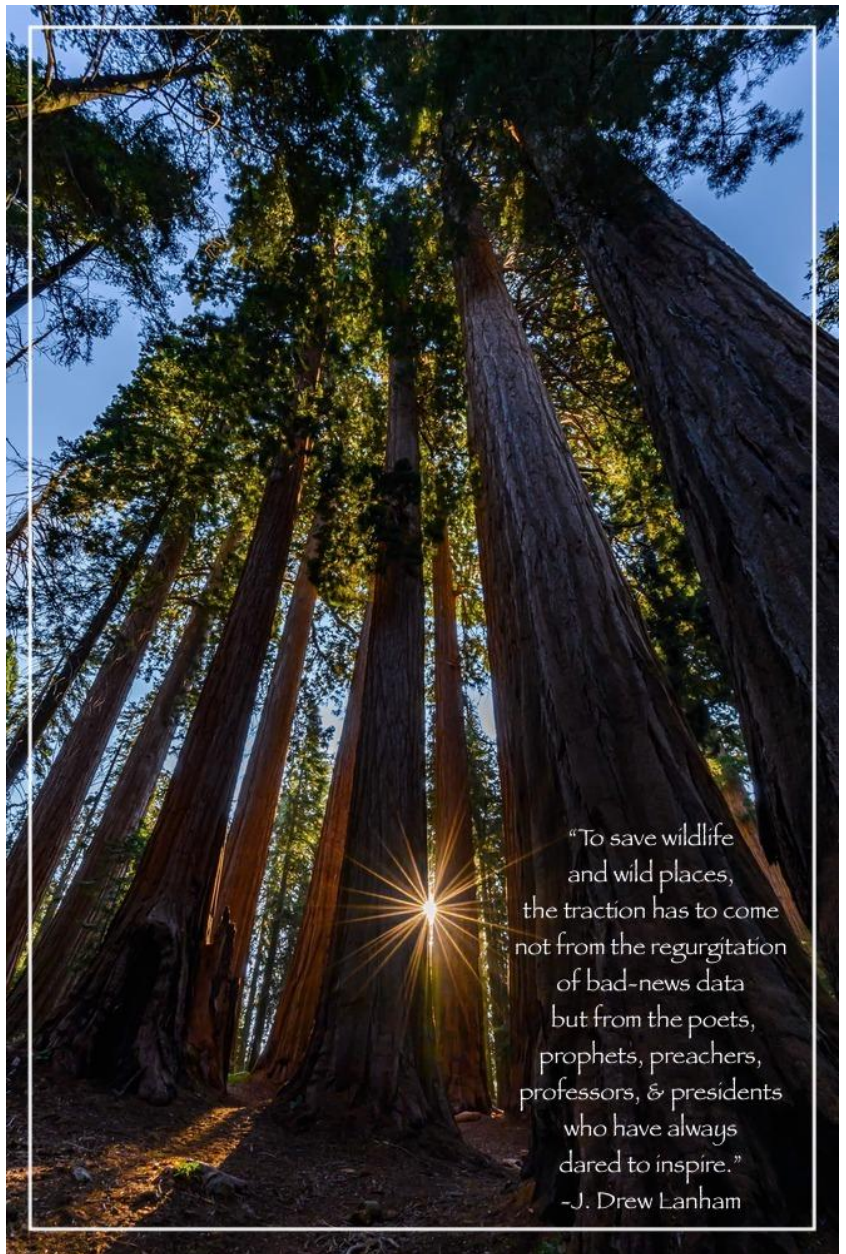
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“To save wildlife and wild places, the traction has to come not from the regurgitation of bad-news data but from the poets, prophets, preachers, professors, & presidents who have always dared to inspire.”  
-J. Drew Lanham

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**READ ALL ABOUT IT** by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates



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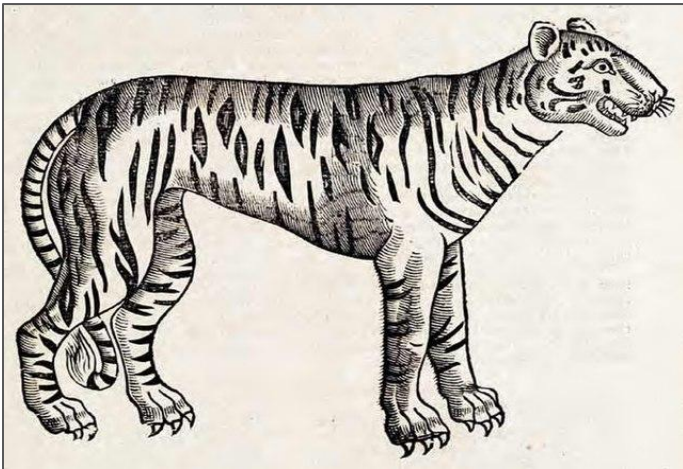
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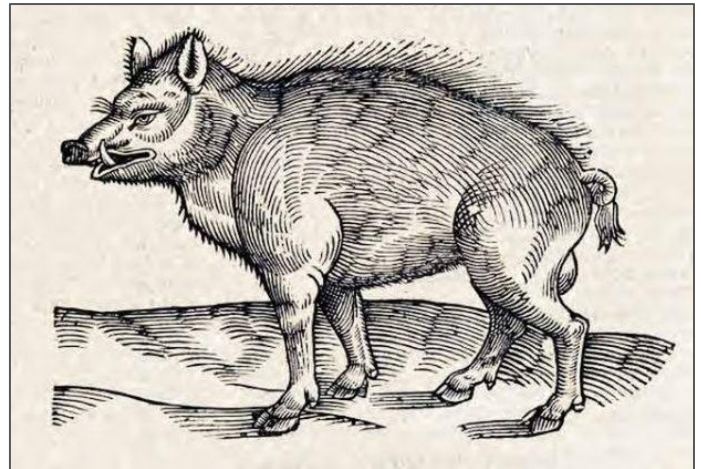
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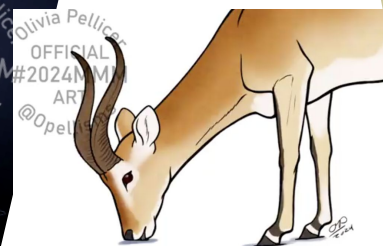
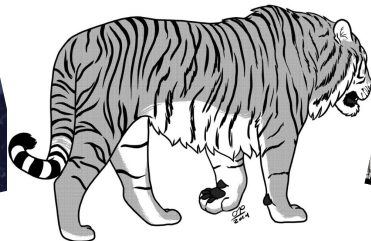
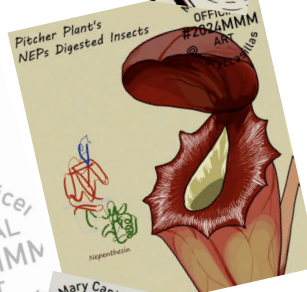
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# COMBATANT ARTWORK

THANK YOU ART teaMMM!



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# CURRENT BRACKET

## OFFICIAL RESULTS

Your Name Goes Here

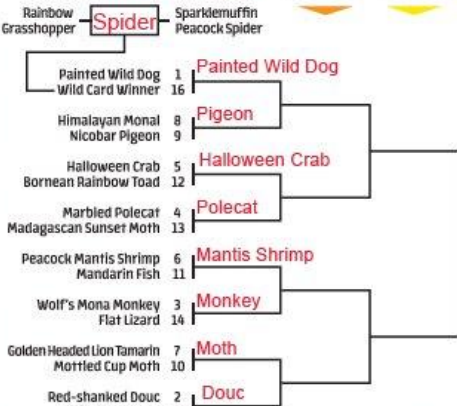


ALL TOURNAMENT INFO:  
libguides.asu.edu/MarchMammalMadness  
NOTE: MMM includes many non-mammal species

EPIC ANIMALS

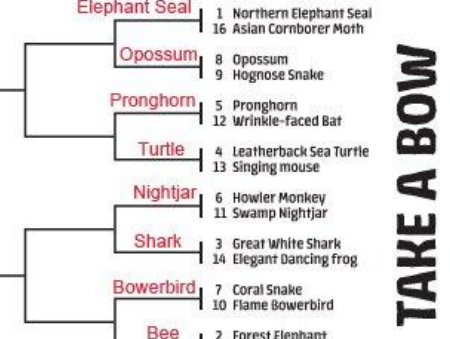
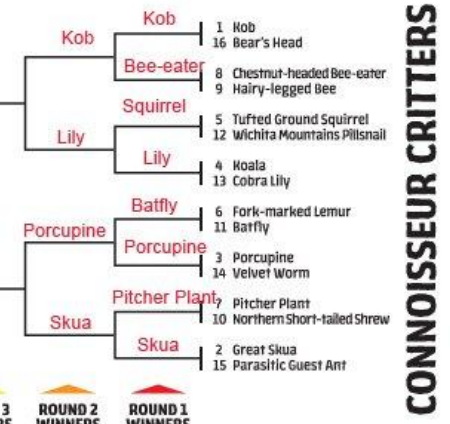


RAINBOW COLLECTION



MMM created and directed by  
Professor Katie Hinde, Arizona State University

LAYOUT BY ASST. PROF. WILLIAM NICKLEY, THE OHIO STATE UNIVERSITY  
CREATIVE COMMONS ATTRIBUTION-NONCOMMERCIAL (BY-NC)  
TYPESET IN TOSTANA MIU PRO. DESIGNED BY BRUNO JARA & LUCIANO VERGARA. FROM LATINOTYPE FOUNDRY.



CONNOISSEUR CRITTERS

TAKE A BOW



AND a special thanks to our friends at Society for Integrative & Comparative Biology for their essay on the worst-seeded combatants!

[Check it Out!](#)

# ROUND 2 TAKE a BOW & RAINBOW COLLECTION



**African Painted Dog (1) vs. Nicobar Pigeon (9)**  
 - African Painted Dogs (*Lycaon pictus*) are especially good cooperative hunters, with several individuals chasing hoofed mammals larger than themselves that are intercepted by packmates, eventually bringing the exhausted animal down and killing through disembowelment.

Nicobar Pigeon (*Caloenas nicobarica*) prefers small islands with tropical forests. Nicobar Pigeon may nest on small offshore islands and travel to larger land masses to forage mostly on fallen fruit and seeds. Nicobar Pigeon's extensive terrestrial activities, and their nests built from twigs and leaves situated 0.5 to 20m above the ground in shrubs/trees make them vulnerable to invasive island predators like rats & cats or competition for fruit with introduced monkeys.

Tonight's battle takes place in the Moremi Game Reserve in the Okavango Delta, Botswana. A pack of African Painted Dogs are resting in the late afternoon. Our combatant African Painted Dog gets up in a "distinctive initiation posture: head lowered, mouth open, and ears folded back" to rally the group to stop resting & get active (Walker et al. 2017). Another African Wild Dog produces an intentional 'sneeze'- an "audible, abrupt exhalations of air through the nose" (Walker et al. 2017) Soon several more African Painted Dogs sneeze until... enough sneezes indicate a quorum has been reached and the pack is on the move!



## R2: RAINBOW COLLECTION & TAKE a BOW

MMMagic transports Nicobar Pigeon from their nesting colony on Pulau Jiew, North Maluku, Indonesia. The pigeon blinks in the bright sun against the semi-arid landscape. Combatant African Painted Dog, having successfully rallied pack mates, lopes out in the lead when he spots a bird flying toward the earth, and lopes on a convergent trajectory. Nicobar pigeon lands on a rocky area looking to drink from any small puddle of fresh water collected in rock depressions. Focused on searching for any drinkable water, the pigeon is not vigilant in one of the most predator intensive terrestrial ecosystems. A quick noisy clapping of wings, indicating disturbance, and a puff of feathers as African Painted Dog gets a quick bite to go. After all, chicken heads are the most effective bait for administering oral rabies vaccines to protect wild African Painted Dogs. PAINTED DOG DEFEATS PIGEON! Narrated by Katie Hinde.



**Wolf's Mona Monkey/Guenon (3) vs. Peacock Mantis Shrimp (6)** – When we last met the Wolf's Mona Monkey/Guenon (*Cercopithecus wolfi*), he was stuffing his cheek pouches full of FIGS. While figs are a favorite food of this frugivore, they've also been known to indulge in other plant materials like leaves, seeds, and flowers. In order to avoid predators, they forage for these plant-based diets in big mixed species groups with other primates! This might help them keep an eye out for any predators that might come by sky (eagles) or stalking through the forest (leopards).



Last we left Peacock Mantis Shrimp (*Odontodactylus scyllarus*), he defended his burrow from Mandarinfish. While Mandarinfish won't have a chance to face off against Shrimpy again, researchers have found that mantis shrimp recognize combatants they've fought before. In addition to their advanced visual system, mantis shrimp can detect odors from a distance thanks to some special hair-like sensory organs (aesthetascs) on their smaller antennae. In order to smell better they essentially whip the water near these organs into a frenzy.

Our combatants meet in the buffer zone just outside of Lomami National Park, one of the Democratic Republic of Congo's newest national parks. This region of the DRC is known for industrial-scale cobalt and copper mines, which are components

## R2: RAINBOW COLLECTION & TAKE a BOW

of the lithium-ion batteries that power modern technology ranging from smartphones to electric cars. Smaller scale, community-based artisanal mining operations, some of which are led by Congolese women like Annie Sinanduku Mwange, may help alleviate human rights abuses by improving working conditions, women's livelihoods, and reducing child labor.

Up in the forest canopy, we have a mixed group of mona monkeys (*C. wolfi*) and red-tailed monkeys (*C. ascanius*) foraging for their favorite respective treats. Like Frog and Toad, these monkeys like to hang together.

SMASH CUT: CoMMbatant Peacock Mantis Shrimp is engaged in ritual combat! A good burrow is hard to find (high fin-terest rates) and a rival mantis shrimp just put in another offer. POW! POW! POW! Mantis Shrimp throws a series of rapid punches! Just as Mantis Shrimp goes in for another round, a MMMagic Portal opens to the Lomami River! Fresh water gushes through the portal into the coral reef! A rapid change in water salinity can be dangerous for crustaceans... mantis shrimp are healthy when water salinity is 32-36 p.p.t. and ~22°C. The MMMagic whirlpool causes ocean water to also flow back through the portal, creating a temporarily brackish fresh and salt-water mix as Mantis Shrimp is pulled closer to the whirlpool portal...

Mona Monkey sees the maelstrom in the river and clambers down to investigate at the water's edge, peering over the branch. Mantis Shrimp's bent poised raptorial appendage juuuuust crosses into the Democratic Republic of Congo river waters...POW POW POW!

GUNFIRE IN THE FOREST!

In 2016, mona monkey and red-tailed monkey meat was 45% of the available game meat in one of the largest markets in Kindu, the closest urban area to Lomami River primate habitat. But the 2017 introduction of a voucher system for regulated hunting has reduced monkey meat at the market, as larger, more sustainable game is prioritized by hunters! THE POW POW POW was a hunter's harvest of an approved ungulate. But the noise scares the monkeys deeper into the forest and beyond the field of battle! MANTIS SHRIMP OUTLASTS MONA MONKEY! Narrated by Mauna Dasari and Katie Hinde.

**Red-Shanked Douc (2) vs. Mottled Cup Moth Caterpillar (10)** – While red-shanked doucs (*Pygathrix nemaeus*) most often walk and jump on all fours (quadrupedally) through their forest habitat, they also exhibit unusually high levels of arm-swinging (suspensory locomotion) for a monkey. This is especially common among juveniles. Courtship in red-shanked doucs is often initiated by females, and preceded by characteristic signals including a thrusting jaw, small head shakes, and raising and lowering of the eyebrows.



# R2: RAINBOW COLLECTION & TAKE a BOW

Mottled cup moth caterpillars (*Doratifera vulnerans*) typically feed on eucalyptus leaves and have been associated with extensive defoliation events in southeastern Australia. Though the larval stage of its life cycle lasts only about 2 weeks, it is the venomous spines of the mottled cup moth caterpillar that earned the species a Latin binomial meaning "bearer of gifts of wounds." #2024MMM

Our combatants meet in Son Tra Nature Reserve in Vietnam, where Red-Shanked Douc retains home habitat advantage. Red-shanked doucs are "selective feeders," meaning their "use of tree species [is] not based on relative density alone" (Lippold et al 2022). And it turns out they are particularly fond of.... FIGS!!! "There are at least 13 fig species in the Son Tra forest, and the doucs feed on them every month of the year" (Lippold et al 2022). Over 1/3 of total feeding time can be spent on figs, with "an increase in the number of fig species utilized in recent years" (Lippold et al 2022). Red-shanked doucs will even eat unripe fig as they still have nutritional value and waiting for fully ripe can mean a monkey misses out when others eat it first.

Anyhoo...MMMagick once again transports MCM Caterpillar to the field of battle. Landing on a branch in Son Tra Forest, Caterpillar begins to search for some delicious eucalyptus. Meanwhile, having spent the afternoon gorging on figs, Red-Shanked Douc decides it's time to nutrient balance and eat some leaves. A specialized gut structure and microbiome help these monkeys process the foliage in their diet. Unable to find any eucalyptus, Caterpillar begins to crawl across leaves to select a twig location to build a cocoon, a process that takes many hours. Red-Shanked Douc plucks a clump of the young leaves he prefers and brings them to his mouth...MONKEY SHRIEK!!!



Caterpillar, hidden on the underside of one of the leaves Douc tried to eat, has STUNG DOUC'S LIPS with one of his venomous spines!! Douc immediately DROPS the leaf and it and the caterpillar FLUTTER DOWN. Leaf and Caterpillar land safely in a clump of foliage on a lower branch as distress vocalizing Douc rubs his painful lip and scrambles to rejoin his family back in the fig tree. Douc has departed the field of battle! MOTTLED CUP MOTH CATERPILLAR VENOM SPINE STABS RED-SHANKED DOUC!!! Narrated by Lara Durgavich.

**Flame Bowerbird (10) vs. Honey Bee (15)** - Among birds, feathers aren't just rainbow, but pupils are too! During his courtship dance, the male Flame Bowerbird (*Sericulus ardens*) will "sashay like a bug-eyed matador, pulsing his pupils to seduce a mate." (Hasheer 2021). Male Bowerbirds are often 5+ years old before they become sexually mature with an elaborate bower and dance. The cognitive development to do these activities takes a lot of learning and practice. In the closely related Satin Bowerbird, young males learn through observation of older males how to build and decorate their courtship bowers. Young males build temporary, poorly constructed practice bowers where they 'court' other males.

## R2: RAINBOW COLLECTION & TAKE a BOW

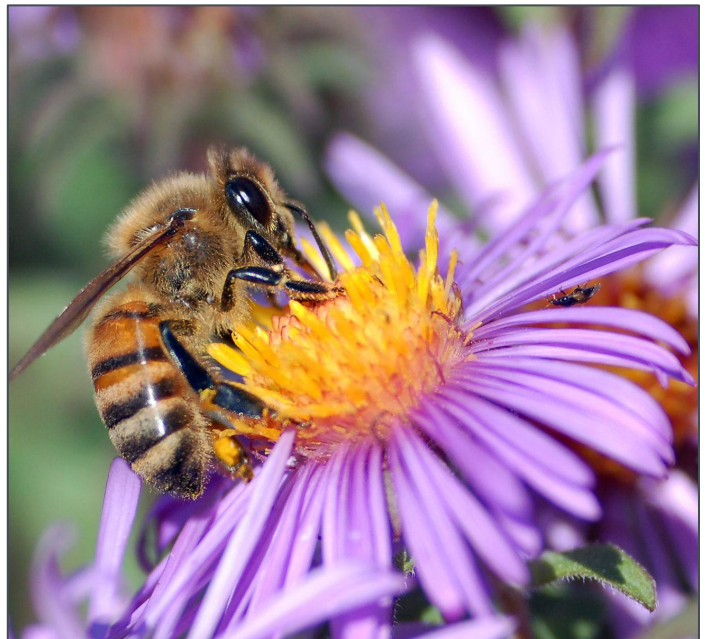


Honey Bees (*Apis mellifera adansonii*) occur all around the world and fulfill key pollination roles. They pollinate \$15 billion worth of crops in the U.S. each year, including 130+ types of fruits, nuts & vegetables. Although most bee species are slow to sting, allergic reactions to bee venom are a leading cause of animal trauma visits to the ER worldwide. Researchers are working on developing recombinant bee antivenom & other beesting preventative therapies.

Tonight's battle is in Lorentz National Park, Indonesia, a UNESCO World Heritage site, the largest conservation area in South East Asia, and home habitat of Flame Bowerbird. Our Flame Bowerbird combatant MMMagically returns to his bower and discovers the bower in ashambles with the breeding season a month away! Bowerbird males can demolish rival males' bowers and steal each other's collected items of flair! MMMagic also translocates Honey Bee from foraging activities in Gabon tropical rainforest to the Indonesian tropical rainforest. Honey Bee sees extraordinary blooms and buzz-swoops to taste the new nectars!

Flame Bowerbird hastily collects construction materials to repair his bower: twigs to structure his

avenue, but he needs purple berries and petals to line the stage of his bower! Honey Bee dives deep into the beautiful purple bloom of a Papua New Guinea Purple Orchid with many blossoms in a row! Flame Bowerbird also spots a Papua New Guinea Purple Orchid, its many blossoms will provide so many petals for his bower! Flame Bowerbird begins snipping petals right where the aggressive Honey Bee is foraging!



Honey Bee deploys her stinger in Flame Bowerbird's gape, the fleshy part where the upper & lower mandibles meet! Fire pain envelops Flame Bowerbird! Flame Bowerbird rears back! Honey Bee's sting apparatus and associated muscles, embedded in the Flame Bowerbird, rip from the rest of Honey Bee's abdomen! Screeching, Flame Bowerbird flies away from the field of battle, as Honey Bee lands back on the Purple Orchid. HONEY BEE STINGS FLAME BOWERBIRD! Narrated by Tara Chestnut and Katie Hinde.

## R2: RAINBOW COLLECTION & TAKE a BOW

**Elephant Seal (1) vs. Virginia Opossum (8)** - Northern Elephant Seals (*Mirounga angustirostris*) are the second largest members of Order Carnivora (just behind southern Elephant seals). Yet they start out nearly two orders of magnitude smaller as 33 kg pups. Within a matter of weeks, elephant seal pups will quadruple in weight, fed a steady diet of milk with 52% milkfat! In contrast, Opossum milk is 12% fat (and whole dairy milk from cows is about 3.2% fat).

Opossums (*Didelphis virginiana*) are prolific scavengers! Especially in urban and suburban environments, where they can comprise over 70% of total carcass visits, providing a valuable ecosystem service by removing carrion. Opossums scavenge in predictable ways. A field that looks at

how organisms decay and are preserved, called taphonomic studies, shows Opossums break into bodies to preferentially eat organs. This leads to distinctive bite marks and breaks on bones.

This battle takes place along the sandy shores of Guadalupe Island. Here the large bull Elephant Seal is briefly resting, while keeping an eye out for late-season mates or rivals. Nearing the end of mating season, many of the female elephant seals have left, leaving the beach mostly occupied by pups. They will remain here for a few weeks before venturing into the sea. Many of these seal pups are dead. The first few weeks are a dangerous time for pups, and the leading cause of death is trauma, mostly from being crushed by the massive bulls as they galumph across the sand confronting



## R2: RAINBOW COLLECTION & TAKE a BOW

challenger males. These seal pup carcasses are aflutter with activity though, as many gulls feast upon this seasonal abundance of carrion. Occasionally a gull will peck at some smaller, un-crushed pups, only to be rudely roared at and scared off.



Transported from its forest to the beach, Opossum is unsettled by the clatter of gull and seal vocalizations. However, Opossum smells the enticing aroma of decaying tissues and tries to cautiously make its way to a delicious meal. Opossum creeps along, when suddenly, a very well-fed seal pup rolls over and thwacks the Opossum! Already stressed out, the contact triggers Opossum to do what it does best – play dead. Defecating itself and going still, not far from the resting bull Elephant seal!

Scanning the beach for an easy meal, a gull spies a small furry mound unmoving in the sand. Landing at the Opossum, the gull sharply jabs its body to test if it is living. The fully catatonic Opossum does not move, even if cut and bleeding. Convinced Opossum is dead by the lack of movement and feces, the gull gives several powerful sharp jabs at the head, tearing out the

Opossum's open eyes. Gulls often pierce the fontanels and eyes of weakened newborn seal pups if mothers are not vigilant. While gulls prefer to scavenge dead things, the catatonic Opossum just seems especially fresh meat. The gulls gather as fake dead Opossum becomes real dead Opossum. Northern Elephant Seal Defeats Opossum! Narrated by Brian Tanis.

**Marbled Polecat (4) vs. Halloween Crab (5)** – Marbled polecats (*Vormela peregusna*) live in underground dens. Although they can dig their own, they will also live in gerbil or jird systems, lining their sleeping chamber with grass in winter as cozy insulation. As a mesopredator, Marbled Polecats are vulnerable to predation by larger predators, including eagle owls, red foxes, golden jackals, stone martens, wildcats, and even European polecats (et tu, Brute?).



# R2: RAINBOW COLLECTION & TAKE a BOW

Like all crabs, Halloween crabs (*Gecarcinus quadratus*) can make a "bubbling sound" by forcing liquid out and over their mouthparts - similar to how we blow bubbles! Halloween crabs are vulnerable to mammalian predators such as raccoons and coati, the Procyonidae, sister branch to mustelids in the supra-Order Musteloidea. Several months ago a NEW predator of Halloween crab was reported... a species of giant semiaquatic wandering spiders, a sit and wait hunter, (*Ancylometes bogotensis*) that perched on a palm consuming the captured crab!



Once again Polecat is found hunting in the Gurbantünggüt Desert, northern China! MMMagic translocates the nocturnal Crab to a dune in the desert! Deprived of the forest and leaf litter habitat the Crab is adapted to, the crab is on high vigilant alert and begins to scurry to find cover. Although the Polecat is a specialized predator of rodents and birds, it is NOT a picky eater, and opportunistically eats lizards, snails, and beetles. The black-orange-red animal skittering around is instantly worth investigation!

Polecat blitz rushes Crab, but realizes its prey is missing a thorax!!! Polecat's go-to method for attacking small prey is a bite to the chest... Polecat

pauses to assess! thR-thR-thR-thR-thR!!! Disturbed by the predator's approach, Halloween Crab rubs his claw's forearm against his tubercle-covered carapace to produce noise "similar to that produced by rapidly running an object over the teeth of a stiff comb" (Abele et al., 1973). Unintimidated by the small Crab's thR-thR-thR-thR, Polecat FLIPS Halloween Crab with versatile front paws! AAH! Halloween Crab UPSIDE DOWN starts WRIGGLING WILDLY to right itself!

SEIZING ITS MOMENT, Polecat CHOMPS on a crab leg just centimeters from a dangerous claw...A slashing crab leg pierces the Polecat's FACE! In reactive pain, Polecat whips his neck and head -- FLINGING Halloween Crab! Well, \*MOST\* of Halloween Crab, one crab leg remains gripped in Polecat's teeth, as a single blood drop runs down Polecat's cheek. Crab scurries away to find a safe place to regenerate its missing leg. Crabs will even self-amputate (automotize) an injured or infected leg to regenerate healthy replacement. #CrabsAreSoMetal POLECAT DEFEATS HALLOWEEN CRAB! Narrated by Gretchen Andreasen.



# R2: RAINBOW COLLECTION & TAKE a BOW



## Leatherback Sea Turtle (4) vs. Pronghorn (5)-

In the nests of Leatherback Sea Turtles (*Dermochelys coriacea*), after 51 days of incubation, baby turtles inside their eggs begin "singing" to their nestmates. As hatchlings, the turtles continue singing, but have fewer types of sounds. Emerging from eggs at the same time as a clutch allows sea turtle hatchlings to together dig out of the sand & rush through a gauntlet of predators. Singing to coordinate the synchronous emergence lowers per hatchling digging effort & predation risk.

Pronghorn (*Antilocapra americana*) are the second fastest living mammal... ON LAND! Pronghorn traits for speed were primarily shaped by selection pressures from now extinct cheetahs (& possibly short-faced running bears) that once roamed what is today called North America. Adult pronghorn, with top speed ~100km/hr, more readily escape predation, but newborn fawns remain vulnerable, especially to coyotes. BUT bringing back wolves to ecosystems reduces coyote predation of fawns, helping to recover pronghorn populations.

Tonight, having laid her eggs, Leatherback has returned to the coastal waters for an inter-nesting swim to a new nesting site, heading North from Cape Canaveral, Florida. Meanwhile, in Wyoming... an approaching spring snowstorm has male Pronghorn leading his herd toward some cover. This is the season in which weather switches frequently

from snow to rain, freezing to melting and back again. Pronghorn's Round 1 barbed-wire wound is festering and oozing. CRACK-CRACK CRACK-CRACK! Pronghorn plummets through snow-covered thin ice into a water-filled natural rock tank! Panicking, Pronghorn tries to pull himself out, but the slippery, nearly vertical sides keep him trapped!



Leatherback Sea Turtle rises toward the ocean surface, exhales her held breath while still submerged (anticipatory exhalation), about to break the surface... When #MMMagic translocates Pronghorn onto Sea Turtle's leathery BACK, pushing her down deeper in the water! Pronghorn prancy-dancy stabilizes on Leatherback Sea Turtle, looking in surprise at his coastal Atlantic Ocean

# R2: RAINBOW COLLECTION & TAKE a BOW

location! Leatherback Sea Turtle ROLL-DIVES so Pronghorn plummets into the ocean! Leatherback Sea Turtle surfaces for a needed breath of air! #2024MMM Pronghorn begins swimming, as pronghorn do when needs must, headed toward the Florida coast on the horizon. Pronghorn's blood is in the water... A large fin slices the surface of the water.

GREAT WHITE SHARK IS ON THE SCENE!

Leatherback sea turtles navigate inter-nesting waters prowled by bull sharks, tiger sharks, & #3-seed **Great White Shark** (*Carcharodon carcharias*). AND in recent days the great white sharks are indeed showing up in Florida!



CHOP CHOP CHOP!!!! #11-seed **Swamp Nightjar** (*Caprimulgus natalensis*) is flying above, disoriented from #MMMagic Translocation... Swamp Nightjar chicks are "highly mobile within hours of hatching and respond immediately by running to the parent birds."

Swamp Nightjar heads toward the Florida coast on the horizon, flying parallel with the water, a few feet above the ocean surface. Great White Shark breaches upward 11.5 feet, (380cm, 15 stoats high) at the flying Swamp Nightjar (as it has been observed doing toward seabirds).



Great White Shark FAILS to make mortal contact with the Swamp Nightjar, who flies as quickly as possible from the field of battle. Deprived of an avian amuse bouche, Great White Shark's multisensory prey detection system that integrates smells, movement, & electrical signal compel the shark to investigate nearby goings on...

Pronghorn & Leatherback Sea Turtle are each swimming toward shore. Pronghorn to return to preferred terrestrial lifestyle, Leatherback Sea Turtle to lay another clutch of eggs. Their movements are detected by the shark. Pronghorn's swimming hooves churn below the water, kicking at Leatherback Sea Turtle! Surfacing again, Leatherback Sea Turtle uses her body mass to swim-shove Pronghorn...

INTO THE EXPLORATORY BITE OF THE GREAT WHITE SHARK! Having never encountered a pronghorn... Great White Shark performs "an exploratory bite to better understand the unfamiliar object" so their "gustation" senses can determine if food. BUT even an exploratory bite from a Great White Shark can catastrophically sever arteries... & Pronghorn bleeds out on the field of battle! **LEATHERBACK OUTLASTS PRONGHORN! GREAT WHITE SHARK OUTLASTS SWAMP NIGHTJAR!** Narration by Prof. Katie Hinde



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## Mona Monkey vs Mantis Shrimp

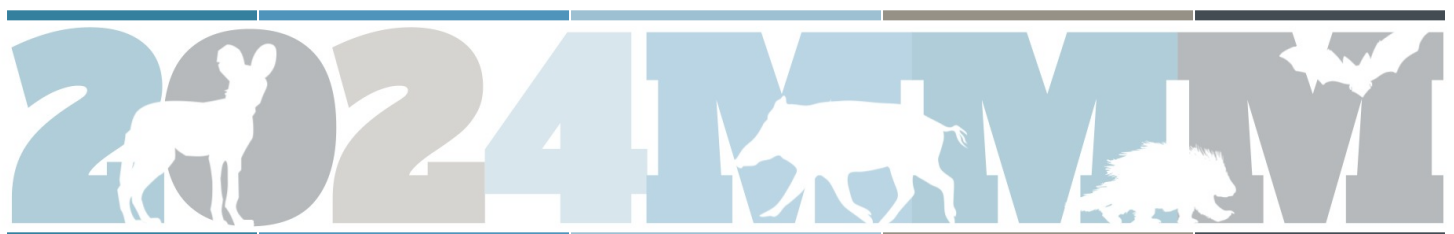
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**READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, & William Yates**



# COMBATANT ARTWORK

THANK YOU ART teaMMM!



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# CURRENT BRACKET

OFFICIAL RESULTS


Your Name Goes Here



**ALL TOURNAMENT INFO:**  
libguides.asu.edu/MarchMammalMadness  
**NOTE:** MMM includes many non-mammal species

EPIC ANIMALS

English Bracket v3.0



Total / 138 max

CONNOISSEUR CRITTERS

RAINBOW COLLECTION

MMM created and directed by  
Professor Katie Hinde, Arizona State University

Layout by Asst. Prof. William Nickley, The Ohio State University  
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Typeset in Lostama Nlu Pro. Designed by Bruno Jara & Luciano Vergara. From Latinotype Foundry.

TAKE A BOW



WOOOOHOOOOO! March Mammal Madness [was covered in USA Today by Jonathan Limehouse!](#) Check out this sweet quote “The MMM team is dedicated to removing barriers that historically leave behind huge groups of learners, and not just cost. MMM is free for anyone to play, but importantly, all the educational materials are also available as open educational resources,” said Anali Maughan Perry, head of Open Science and Scholarly Communication at ASU Library.

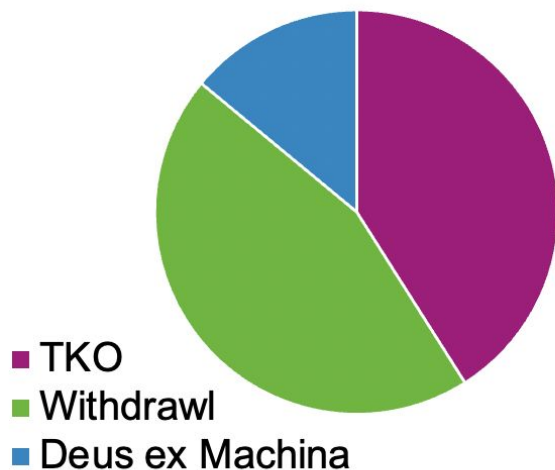
Now I almost feel bad for what Great Skua did to Northern Gannet.

# 2024 MMM by the Numbers

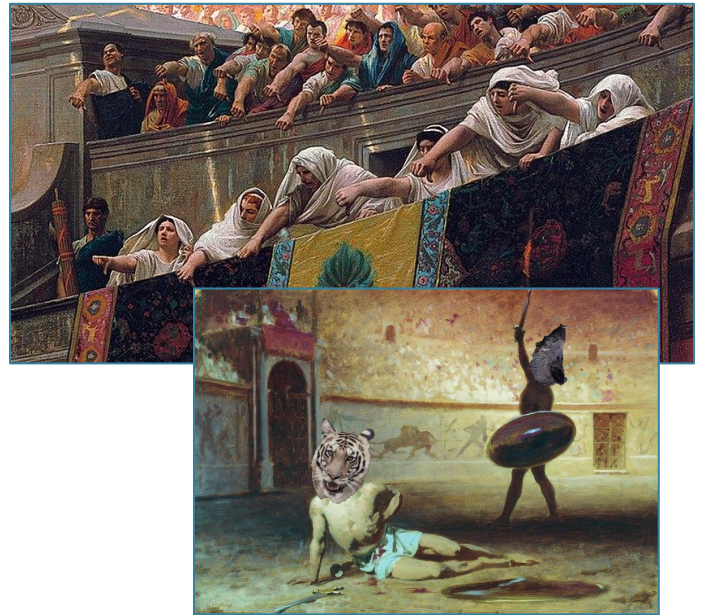
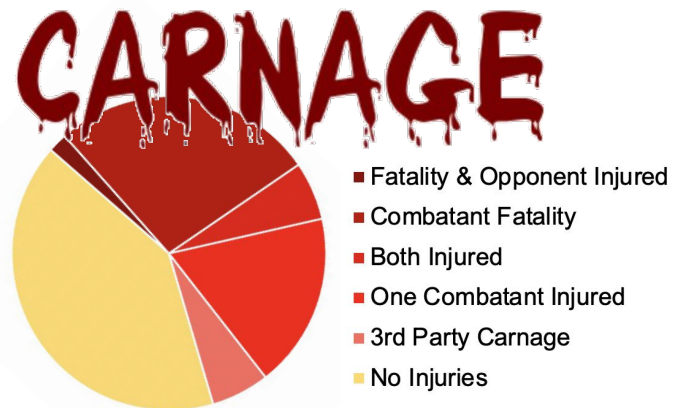
From an initial field of 65 combatants, through the Wild Card, Round 1 and Round 2 we have traveled around the world and through time as 49 species were eliminated from the tournament. Over these battles, scientist-narrators have cited N>330 publications from the scholarly literature. From these publications are natural history descriptions of animal, plant, & fungi- their physical traits and ecosystem roles. From Nature papers, to magnum opus books, to doctoral dissertation, these resources are invaluable records of science, nature, and knowledge.

As promised in the Wild Card Read All About It, combatants arrive to an encounter with their physical AND behavioral traits. These traits include adaptations to only gradually escalate confrontations, intimidate opponents, and quickly exit stage left for safer surrounds. As a result, just as in nature, withdrawal from the encounter is the most common “battle” outcome (N=22/49, 45%). Outcomes of Total Knock Out (TKO) are a close second (N=20, 41%).

## 2024 Tournament “Battle” Outcomes: WC, R1 & R2



And although feedback from the coMMUnity suggest an overall impression of “too much running away!” and “where’s the carnage?!” such responses are demonstrably unevidenced. Although no injuries to either opponent are most common among all possibilities, some amount of “carnage” occurs in the majority of “battles.”



Encounters involving a combatant fatality or injury were routine; mutual injury/fatality or carnage for a 3rd party are less common. Importantly though, demand all you want, MMM does not mimic a video game or showcase uninformative violence.

# BUSTED BRACKETEERS!

Sometimes our pick for Champion meets an unfortunate early exit from the tournament. Upsets happen, and they are called upsets not because people respond to them with cordial equanimity. BUT in 2024, in collaboration with MMM graphic design guru, Prof. Will Nickley, we present the **Busted Bracketeers Bracket!** While you can't update any digital submission, you CAN pick a new champion to cheer & keep following the MMM action through to the end! Rally your fellow friends with busted brackets to form your own local club! **Educators, consider having a prize for the best score or best sustained engagement of the Busted Bracketeers!**

SO IT'S ROUND 2 AND YOUR BRACKET IS BUSTED?

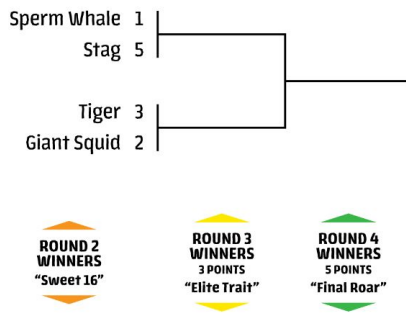


Your Name Goes Here



ALL TOURNAMENT INFO:  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
 NOTE: MMM includes many non-mammal species

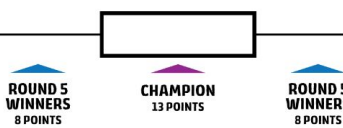
## EPIC ANIMALS



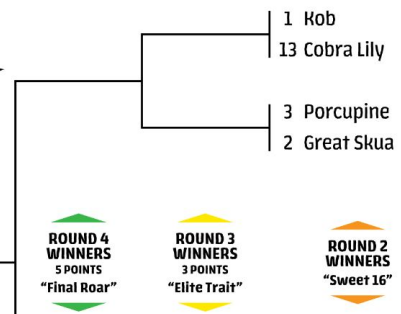
- Painted Wild Dog 1
- Marbled Polecat 4
- Peacock Mantis Shrimp 6
- Mottled Cup Moth 10

## RAINBOW COLLECTION

English BUSTED Bracket v1.0



## CONNOISSEUR CRITTERS



- 1 Northern Elephant Seal
- 4 Leatherback Sea Turtle
- 3 Great White Shark
- 15 Honey Bee

## TAKE A BOW

MMM created and directed by Professor Katie Hinde, Arizona State University  
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 Typeset in LosLana Nlu Pro. Designed by Bruno Jara & Luciano Vergara. From Latinotype Foundry.



**Jessica Popescu**  
@JessPopescu

#2024MMM RND 2  
TAB & 🌈 COLLECT.  
EMOJI BATTLE



7:12 PM · Mar 25, 2024 · 203 Views



**Amy McEuen, PhD** 🦋 🌿 @mceuen\_amy · 48s  
Omg!! yes!! #TeamInvert #2024MMM



**Dr. Lara Durgavich** @tinkeringprim8 · 1m

Replying to @tinkeringprim8  
MOTTLED CUP MOTH CATERPILLAR VENOM STABS RED-SHANKED  
DOUC!!!! #2024MMM



**Human Person** @radiationmouth · 49m

I AM OVERSTIMULATED SEND HELP #2024MMM



**A Girl is Tired** @FSUSarah42 · 50m

Tonight's @MMMlets go battles were brutal. :



**Jem** @little\_jems · 57m

OFF THE FIELD OF BATTLE! #2024MMM



**Spencer Johnson** 🇩🇪 @deathbymustelid · 55m  
For a second there I was worried I'd spoken too soon and was going to lose  
my champion on a jinx. Whew! #2024MMM #TeamPolecat



**Orion** 🌈 &sm9eb 🇪🇺 🏆 @sm9eb · 1h

Noooo, no thwacking! Hiss, #TeamOpossum, hiss!! #2024MMM

2024 MARCH MAMMAL MADNESS

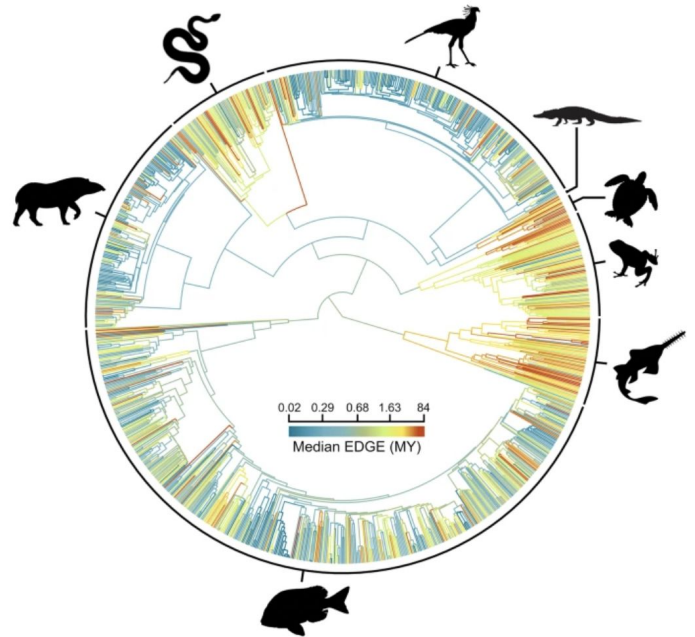


# SWEET SIXTEEN

From the original 65 combatants of March 11th, we now have 16. In this round we spotlight HUMAN IMPACTS on ecosystems and species. The theme of this round harmonizes March Mammal Madness Life Sciences lesson plan with Next Generation Science Standards in the United States. In February 2024, Grumbs and colleagues reported that “Human-driven extinction threatens entire lineages across the Tree of Life.” If we continue our current practices of extraction, destruction, and contamination, we can “expect to lose 86–150 billion years (11–19%) of jawed vertebrate evolutionary history over the next 50–500 years.”

But humans are not only the problem, if we could transform our world for the worse, you better believe that we can transform our world for the better. Protecting habitats and species, restoring ecosystems and their interconnections are essential steps for planetary health. Environmental health, animal health, and human health are all interconnected. The field of One Health brings together people working in medicine, public health, agriculture, wildlife management, sciences,

Family-level Evolutionarily Distinct and Globally Endangered (EDGE) scores across the jawed vertebrate Tree of Life. (Figure 7 from Grumbs et al. 2024)



sustainability, conservation, business, and leadership. Each of us can make a difference individually in our choices and decisions. But working together we can transform our approach to one another and our natural world so everyone has the best chance at living an incredible life. By volunteering in our local communities, by talking with our neighbors and contacting our elected officials, we can forge the world we all deserve, from humans to forest elephants to peacock jumping spiders.

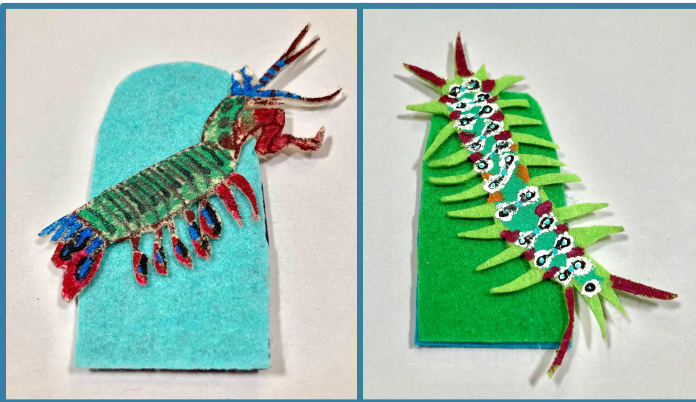
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# SWEET SIXTEEN & HUMAN IMPACTS

## Peacock Mantis Shrimp (6) vs. 10th-seed Mottled Cup Moth Caterpillar (10) -

Peacock mantis shrimp (*Odontodactylus scyllarus*) are valued in the aquarium trade for their beautiful coloration and in some areas as a food source. While the IUCN hasn't evaluated the conservation status of the peacock mantis shrimp, it's not believed to be threatened/endangered. Mantis shrimp occasional stowaways in live aquarium rock and can end up terrorizing aquarists and their fish while evading capture.



Felt Artwork of 2024 Combatants courtesy of Cheer Stoat!

Mottled Cup Moth caterpillar's (*Doratifera vulnerans*) venom has proven quite the deterrent to primates so far in the tournament, but its “rich diversity of polypeptides” may ultimately provide scientists with inspiration for new anti-bacterial medicines (Walker et al 2021).

Tonight we are in the warm waters off of Babeldaob Island in the UNESCO Ngaremauu Biosphere Reserve and the Palau National Marine Sanctuary. Established in 2020, the PNMS is one of the world's biggest marine protected areas. The reefs in this region are thermally tolerant and can withstand higher temperatures and heat waves due

to the coral's genetic diversity and their special symbiont algae. Mantis Shrimp has home habitat advantage. Just 30 feet below the surface, Peacock Mantis Shrimp burrow receives peeks of sunlight through the corals above. Peacock Mantis Shrimp is squaring off with a rival for the burrow. Mantis Shrimp puts on his most intimidating "meral spread" - he's standing on his hind legs and puffing up his chest while spreading his arms to look as big as possible.

Mottled Cup Moth caterpillar, meanwhile, also has its attention directed to matters of real estate and embiggening. After all, the 2-week caterpillar (larval) life stage that it began before its Round 1 battle on March 18 is now at an end. In the time since its stinging venom sent Red-Shanked Douc fleeing to figgier pastures, Mottled Cup Moth caterpillar has attached itself to a leaf stem and begun spinning a cocoon, "which it agglutinates by the moisture of its mouth" (Duncan, 1841). Mottled Cup Moth caterpillars build their cocoons by weaving a spherical multi-layered mesh of silk in a cup shape around themselves. As the cocoon thickens and hardens it looks not unlike the gum nut of a eucalyptus tree. In the arid Australian habitat, a cocoon forms a protective environmental bubble that helps retain moisture for the metaphorizing Lepidoptera. SHPWUM! As Mottled Cup Moth caterpillar transforms in its cocoon, a MMMagic portal collects the Lepidoptera and cocoon!

Back at the burrow, the rival is not intimidated by Mantis Shrimp's display. Rival attacks! WHOOMPHE! Mantis Shrimp flips around and shields himself from the powerful blows with his

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tail fins (telson)! The MMMagic Portal transports Caterpillar's cocoon outside the Mantis Shrimp Burrow... but the cocoon immediately rises to the surface, buoyed by the air within! Floating on the surface, Caterpillar's cocoon gets caught on a mangrove seed pod that's been floating for nearly a year... together they drift toward shore! Mangroves, superheroes of biodiversity are "nurseries for the world's seafood supply" (Blum & Herr, 2017). MANTIS SHRIMP OUTLASTS MOTTLED CUP CATERPILLAR! Narrated by Lara Durgavich and Mauna Dasari.

**Great Skua (2) vs. Crested Porcupine (3)** - Aggressive, apex predators with a generalist diet, Great Skua (*Stercorarius skua*) populations may be generally increasing across their range, with negative impacts on other seabird species. Crested Porcupines (*Hystrix cristata*) have an unusual distribution - North Africa, parts of sub-Saharan



Africa, and Italy. Archeological and genetic evidence suggests that porcupines were introduced to Europe during the Middle Ages. A protected species in Italy, Crested Porcupines face threat from poaching, partially due to their reputation as crop pests. Currently, porcupines appear to be expanding their range in Italy northward.



The afternoon sun is peeking through the clouds in St. Kilda, shining down on the ancient storage huts built from stones (cleitan) that dot the clifftops and hillsides. MMMagic translocates Porcupine from an afternoon stroll to the remote Scottish archipelago. Though mainly nocturnal, Crested Porcupines will sunbathe and forage during the day, especially in early spring. Porcupine pays no heed to the change of scenery and continues her search for sustenance over the slightly damp and slippery rocks when... JACKPOT! A partially decomposed and already picked through Soay

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sheep! Not only will Crested Porcupines eat carrion meat, they also engage in bone chewing (osteophagy). Porcupine begins sifting through the remains, looking to select a few bones pieces to bring back and add to the collection in her burrow.

Great Skua swoops in from over the edge of the cliffside, where it will soon prey on colonial seabird nestlings, to continue scavenging on its sheep carcass. Great Skua has a very particular set of skills: lethal force (attacking/drowning other birds), stealing food, and carcass scavenging, earning them the sobriquet "Pirate." Great Skua dives towards the rustling Porcupine. Startled, Porcupine lifts her head, spiky crest raised in defense. Great Skua swoops avoiding spines before diving back towards the Porcupine from behind! Great Skua flies with feet out to push down on Porcupine who twist-maneuvers defensively! PORCUPINE QUILLS PIERCE GREAT SKUA'S FOOT!

Great Skua flies up and circles to come back down at Porcupine, who spins and backs up to watch the aggressive bird! Porcupine stamps her back feet in warning... but the crumbling rocks at the cliff edge give way beneath the Porcupine! Scrambling with her front paws below the cliff edge, sea spray, and bird poop have made the cliff dangerously slick. Great Skua dives repeatedly at the Porcupine until Porcupine falls from one of the tallest sea stacks in Europe! At the top of the cliff, Great Skua's sturdy, slightly hooked beak grasps a Porcupine quill and she pulls it from her webbed foot. After all, this Porcupine's quills aren't barbed. SKUA PESTERS PORCUPINE OVER CLIFF! Narrated by Alyson Brokaw and Katie Hinde.

**Kob (1) vs. Cobra Lily (13)** – Kob (*Kobus kob*) change social and mating behaviors at different densities. With  $>14$  Kob/km, males gather centrally in a lek to display fitness and attract mates. Less than that and males disperse to fiercely defend resource territories solo, acquiring mates that stop by. Solo male kobs are far more likely to become prey in territories vs leks. Being alone in small territories makes it easier to be ambushed by predators. Once kob densities decline, populations are more likely to crash and disappear regionally. And many kob populations are in decline. Living in savannahs near water, kob's preferred habitat is also prime area for farming. Yet despite being uncommon in much of western Africa, people living near \*protected\* areas regularly see kob!



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Cobra Lily's (*Darlingtonia californica*) biggest threats are humans harvesting these plants for personal collections. The fens, bogs, and wetlands where lilies are found also are home to many plant species of conservation concern. Why? Serpentine Soils! Serpentine soils are unique habitats harboring endemic species, found only in these extreme habitats (e.g., Cobra Lily!). Parts of the western US (CA and OR) have some of the largest serpentine areas with large numbers of endemic flora. Serpentine soils are at risk for a variety of human-centric reasons, including fires, deforestation, and mining.



Along a river at Kainji Lake National Park, our Kob is patrolling his territory, the water being especially valuable this time of year (it's the dry season). Several female kob are around & Kob feels safe lowering his head to grab a mouthful of soil and grasses. Cobra Lily's extensive and sensitive root system helps with plant regeneration post-fire and acquires water to its pitcher for prey capture. After Round 2, Cobra Lily is rehydrated and is ready for a meal! Cobra Lily attracts prey via sweet scents and promises of nectar. Diptera are common prey and today is no different. Lily quickly lures in and traps a fly.

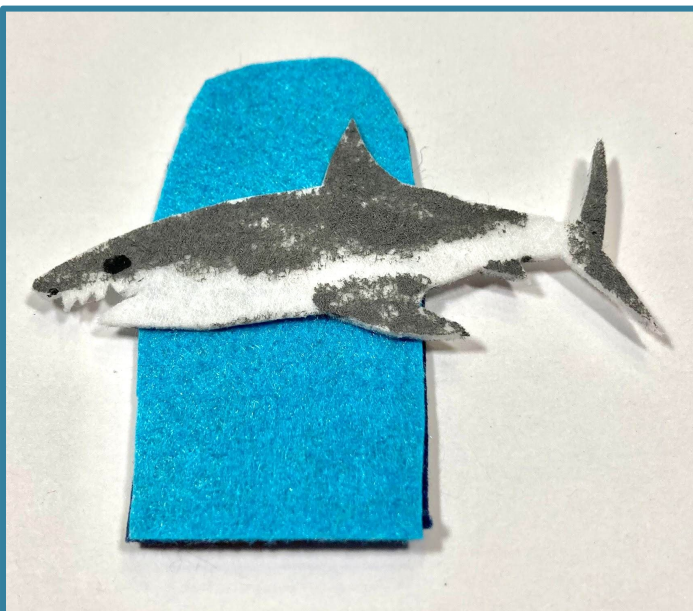
SUDDENLY Cobra Lily is MMMagically translocated right in front of Kob!! Kob jumps back in grave alarm at the serpentine looking plant of the serpentine soils! African rock pythons (*Python sebae*) are known predators of Kob and Cobra Lily resembles a RAISED PYTHON! Kob flicks his ear and rounds his jaw for a slow chew inspecting the possible predator. Cobra Lily is motionless. Both connoisseurs will take a long time to digest their meals, at least a week for Cobra Lily for its fly and hours for Kob to break down plant material (foregut fermentation!). Wasting energy unnecessarily has drawbacks. Typically Kob will rush into water to wait out predators, but is Cobra Lily even a predator!?! The weirdly acting "snake" appears much smaller than a typical python and mammalian herbivores are known for predator inspection!

Kob takes another slow chew, eyeing Cobra Lily for intent. The behavior of this "snake" is unusual...African rock pythons are usually ambush

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predators and won't sit out in the open. Kob takes a step toward Cobra Lily. Cobra Lily is motionless. Kob takes another step closer. Cobra Lily is motionless. Kob sniffs Cobra Lily. Cobra Lily is motionless. Kob bites Cobra Lily. Cobra Lily is motionless. Kob begins eating Cobra Lily. Still wedged in Kob's hoof, Bear's Head Fungus is down to the last morsels of conifer. KOB CONSUMES COBRA LILY! Narrated by Brian Tanis and Jessica Light.

**Great White Shark (3) vs. Honey Bee (15)** – Large sharks such as the Great White Shark (*Carcharodon carcharias*) can shape the ecosystems where they live but fear of sharks have led to severe population declines due to large-scale, indiscriminate cull campaigns. Public education and awareness campaigns that focus on feared animals have helped address misconceptions and improve social attitudes in communities who share their environment in favor of non-destructive management tactics.



Humans and non-human primates have a long history alongside honey bees (*Apis mellifera adansonii*). As one of the most caloric-dense foods in nature, it is no surprise honey and bee larvae have a prominent place in many human diets. Honey Bee hives not only can protect agricultural fields from Elephants, but the bees help pollinate the forest and crops and honey contributes to sustainable income to local communities in West Africa. Bees are long represented in our agriculture as well as our visual arts and literature, evidenced by 8K year old Spanish cave paintings of honey hunting and 4.5K yo Egyptian carvings of beekeeping. Even Shakespeare was a beekeeper.

Our combatants meet at the beach in Del Mar, CA (San Diego County), a popular beach for

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r swimming, paddleboarding, surfing and NOAA reports the weather to be clear with a southwest wind. Great White Shark is in the nearshore zone, between the calm waters of a reef break and the shoreline swimming peacefully just like every other day. She feels the vibrations of people recreating in the water and pays no mind to the people. As the diel cycle shifts with the setting sun, a boil of prey fish rises toward the sea's surface and Shark follows in pursuit of a delicious and nutritious meal as seabirds fly above the shoal.

Honey Bee is transported by MMMagic to the Southern CA coast. HONEY BEE IS ALIVE!! But she is fragile. 48 hours since Honey Bee had her stinger and abdominal muscles torn from her gut in a defensive response to Flame Bowerbird plucking her flower on the field of battle in Round 2 in Indonesia, and the injury is grave. "Contrary to popular belief, worker bees stay alive for 18–114 h after the sting autotomization" and continue doing their role in the hive as well as they can (Pucca et al. 2019). But Honey Bee is tired now and in a slow, downward flight path, she flutters to the ocean surface, drops to the water and floats on the rocking waves. As the sun sets on the California coast, a gentle wake from the Great White Shark's dorsal fin ripples Honey Bee as she slips into her forever sleep. GREAT WHITE SHARK DEFEATS HONEY BEE! Narrated by Mallika Sarma and Tara Chestnut.

## **African Painted Dog (1) vs. Marbled Polecat (4)**

- African Painted Dogs (*Lycaon pictus*) are one of the most endangered canid species in the world, with an estimated 6000 remaining, and they live in

increasingly isolated populations. When they leave their family group, African Painted Dogs disperse in coalitions with same-sex siblings, sisters with sisters and brothers with brothers, to find or form new groups, traveling hundreds of kilometers in a matter of weeks and across international borders. Dispersal mortality can be high from human causes like poisoning, shooting, vehicular collisions, and the species has long experienced human persecution.



Marbled Polecats (*Vormela peregusna*) will kill their great gerbil and jird prey and then appropriate the prey's burrows for themselves as though to say "well you won't be needing this any more." A review of this "refuge appropriating" behavior shows N=14/17 are mustelids! Marbled Polecat populations are decreasing and considered vulnerable due to habitat loss to agriculture and human-caused mortality from road traffic and secondary poisoning by rodenticides ingested by their prey.

# SWEET SIXTEEN & HUMAN IMPACTS



Tonight our battle occurs in southern Tanzania. An hour ago, after a cooperative chase, the African Painted Dog pack brought down a blue wildebeest, one of their preferred prey. Accounting for hunting success rate of attempts (38%), distance chased (average 0.7km), and prey body mass (average 93kg), blue wildebeest are the best bang for the buck for African Painted Dogs in this habitat.

MMMagic Translocation brings Marbled Polecat to the scrub-brush near the kill site. His poor eyesight makes assessing the situation tricky, but his nose twitches with all the aromas of African Painted Dog and dead wildebeest. Combatant African Wild Dog was at the front of the pack and gorged as soon as the prey was brought down. Now with a partially full belly he benevolently watches the slower-to-arrive juveniles chow down with nepotistic protected access to the wildebeest. Surrounded by family, feeling sassy, African Painted Dog looks around and spots Marbled Polecat!

In a sneaky sprint pounce, African Painted Dog grabs Marbled Polecat in his mouth! African Painted Dog carries the skinny mustelid out of the shrubbery and plops him on the ground, as though to say BEHOLD what I've found! Alarmed, Marbled Polecat "exhibits a characteristic aggressive posture: raising up on its legs, arching its back, curling its tail over its back with tail hairs erect, raising its head, baring its teeth, and giving shrill & hoarse hisses!" (Gorsuch & Larivière 2005). African Painted Dog slap-bats the Marbled Polecat to the ground & leaps after it! African Painted Dog isn't killing the Marbled Polecat! He "appears to be hunting it in play" like it does with mongoose! (Creel & Creel 1995). All of a sudden there's a new scent in the air... A PACK OF LIONS HAVE ARRIVED TO COMMANDEER THE WILDEBEEST.



Giles Laurent / Wikimedia Commons / CC BY-SA 4.0

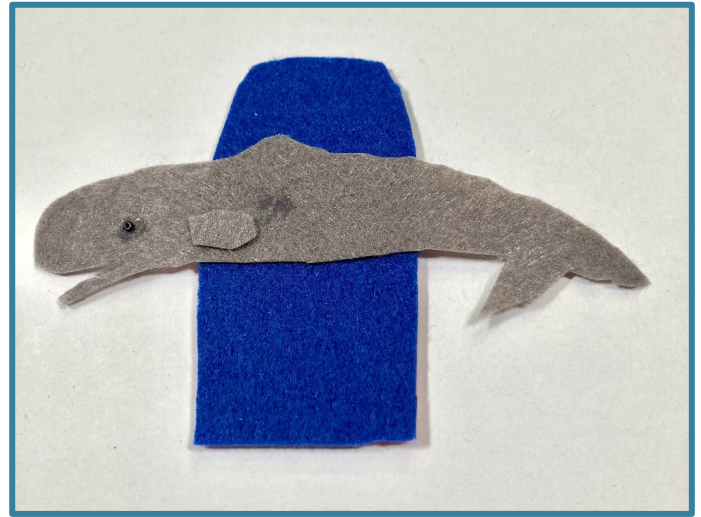
# SWEET SIXTEEN & HUMAN IMPACTS

The African Wild Dogs stand up at the wildebeest kill, staring at the approaching lions. Combatant African Wild Dog hyper-vigilantly evaluates what's unfolding. With African Painted Dog momentarily distracted by lions, Marbled Polecat has twisted around and "emits a foul-smelling secretion from enlarged anal sacs" in the African Painted Dog's face! (Gorsuch & Larivière 2005). African Painted Dog releases the Marbled Polecat, rubbing his face against the ground to wipe away the Polecat's stinky secretions. Marbled Polecat bolts away from the kill site, just before the grumbling African Painted Dogs automatically relinquish the wildebeest to the dangerous lions. "When lion were present, African wild dogs always got kleptoparasitized." (van der Meer et al. 2011). Looks like the Painted Dogs will have to hunt again soon. PAINTED DOG OUTLASTS POLECAT! Narrated by Katie Hinde and Gretchen Andreasen.

**Sperm Whale (1) vs. Red Deer Stag (5)** – Humans have a long history of hunting whales, mostly for oil, and we still see impacts of those cullings on sperm whale (*Physeter macrocephalus*) numbers and demographics today. Modeling suggests there were almost 2 million sperm whales in 1710 pre-whaling, and today just over 800,000 individuals. Moby Dick was based on real-life events of the whaling ship called the Essex, which you can read about in Nathaniel Philbrick's book "In the Heart of the Sea."

Like raccoons and coyotes, red deer (*Cervus elaphus*) have adapted to live within and near human landscapes, changing their behavior based

on our use of space, including hiking and off-trail use in national parks. Deer in Germany's Kellerwald-Edersee National Park ran away from people more often off-trail than folks using trails, highlighting an easy way to reduce human-wildlife conflict. You should always stay on trails!



Tonight we find Sperm Whale far from the coast, sprint-swimming at the water's surface at nearly 8mph. Because Sperm Whale is being pursued by a pod of orcas in hunting formation! Truly the wolves of the sea, orcas regularly hunt whales much larger than themselves and specifically hunt sperm whales by isolating an individual and seriously wounding them before devouring their prey. Sperm Whale can't use the species main defensive maneuver, the rosette, because only GROUPS can form a circle with heads pointing in and tails outs. Sperm Whale is a large, over 40 year old male who swims alone! ORCAS CONVERGE ON THE SPERM WHALE. Meanwhile, Red Deer, the largest surviving land mammal of the British Isles, swims between small islands of the Inner Hebrides, with a maximum swimming distance of ~7km.

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MEANWHILE, OCEAN WATERS BECOME CLOUDY RED AS THE SPERM WHALE'S TAIL THRASHES!!! Sperm Whale has deployed DEFENSE DEFECATION and spreads red-colored poop from his diet of cephalopods! ORCAS change direction to avoid the poo cloud... when MMMagic translocation provides opportunistic venison. After all, mammal-hunting transient orca prey on swimming deer and moose! SPERM WHALE OUTLASTS STAG! Narrated by Patrice K. Connors.

**Northern Elephant Seal (1) vs. Leatherback Sea Turtle (4)** – Northern Elephant Seal (*Mirounga angustirostris*) males can grow as large as 410cm & top out the scales at ~2000-2200kg (~10,200 stoats). Hunting for the fur and oil trades brought the Northern Elephant Seal to near extinction. In fact, the species was repeatedly thought extinct in

the late 1800s. Today marine mammal protections have enabled population growth to ~110,000 adults! During prehistory before the arrival of humans into North America, breeding colonies of Northern Elephant Seals would have favored islands over mainland to avoid bears, saber-tooth cats, and dire wolves, among other terrestrial predators.

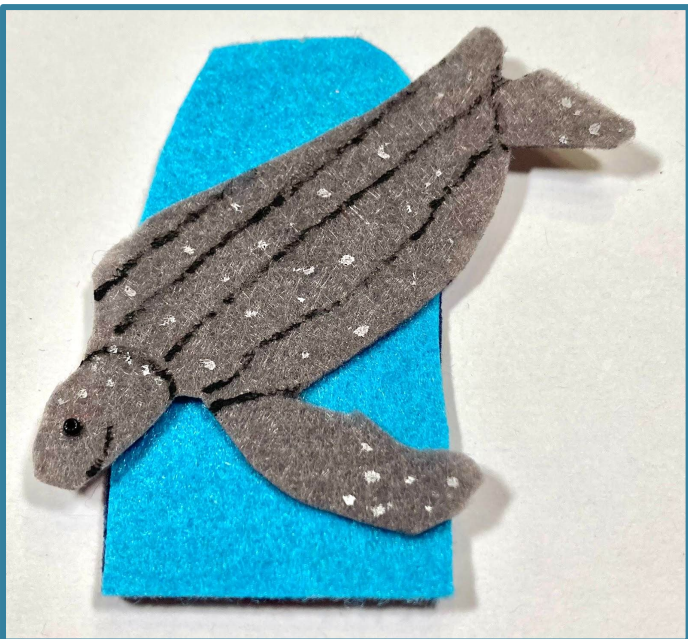


Leatherback Sea Turtle (*Dermochelys coriacea*) is the largest of the marine sea turtles, her shell length tops out around 179cm with a likely top weight around 563kg (2560 stoats). Although one record leatherback was reportedly 900+kg! Leatherback sea turtles are vulnerable to extinction as their populations decrease due to many factors: ocean pollution and plastic garbage, fishing bycatch, and construction and climate change destroying essential beach nest habitat.

With the breeding season mostly over, our male Northern Elephant Seal will shortly abandon his beach territory once the last females wean their

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pups and return to the pelagic zone of the Northern Pacific Ocean. On the Florida coast, Leatherback Sea Turtle is hauling out of the ocean to deposit her last clutch of eggs when MMMagic translocation delivers her to the breaking surf on Northern Elephant Seal's stretch of beach. Sand temperature determines whether sea turtle hatchlings are male or female. By depositing eggs in different beaches, Leatherbacks are likely to produce a mix of sons and daughters. BUT global warming has increased sand temperatures causing fewer male leatherback sea turtles.



Northern Elephant Seal sees the big brown Leatherback Sea Turtle... is this a subadult male attempting to infiltrate his territory for mating with the few remaining females?! Male Northern Elephant Seal gives a warning SNORT! Leatherback Sea Turtle has difficulty locomoting on land, her "front flippers push against the substrate to lift body up and the rear flippers push forward. The imbalance created and the horizontal

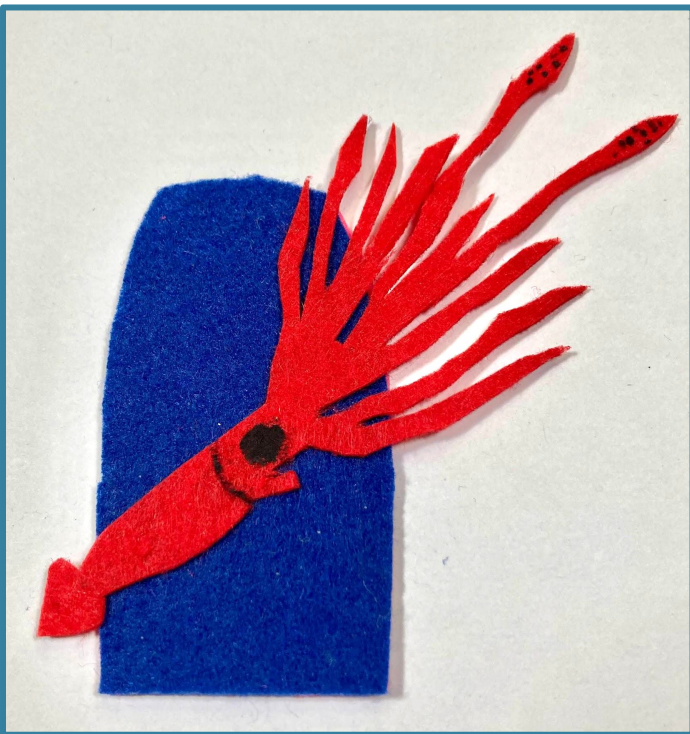
component drags the turtle forward" (Walker 2010). Northern Elephant Seal escalates his vocal warning with a "clap-threat... an extremely loud, resonant, clapping sound with a metallic quality which suggests the exhaust noise made by a diesel engine" (Stewart & Huber 1993).

Leatherback Sea Turtle, after 5 pulls of her front flippers, has to take a brief rest, before continuing forward. Elephant Seal rises up to his full upright battle-imminent 'this is your absolutely last warning' stance and a chest-to-chest, body blows and canine slashes are headed your way... unless a rival backs it up on out of here! Leatherback Sea Turtle begins digging her nest. Northern Elephant Seal CHARGES, undulating his body by pushing off with his front flippers and flexing his spine. This pinniped sprints at 2.56 meters/second (5.7mph).

Northern Elephant Seal TRAMPLES over Leatherback Sea Turtle... BUT Northern Elephant Seal's many months of fasting while defending his section of the beach have taken a toll on his body mass and he's lost over 1000kg by the end of March! LEATHERBACK TURTLE IS UNCRUSHED BY THE ELEPHANT SEAL! Leatherback Sea Turtle tangle with the predatory bite force of big sharks and can survive (although not always). BUT between the aggressive Northern Elephant Seal and the active gulls, this beach is hostile terrain for Leatherback's nestlings and she slowly withdraws back to the sea to swim to a better nesting site. NORTHERN ELEPHANT SEAL OUTLASTS LEATHERBACK TURTLE! Narrated by Katie Hinde.

# SWEET SIXTEEN & HUMAN IMPACTS

**Giant Squid (2) vs. Tiger (3)** – For the general public, other than butterflies, invertebrates are rarely the charismatic species that motivate conservation priorities. UNFORTUNATELY! Giant Squid (*Architeuthis dux*) may be the flagship that 'vulnerable marine ecosystems of submarine canyons' have needed! Ocean acidification, global warming, unsustainable deep-sea fisher harvest, and the effects of acoustic waves produced during seismic surveys are all impacting Giant Squid.



In the early 1900s, 100,000 and 9 subspecies of tigers lived in areas across Eurasia, including Caspian Tiger (*Panthera tigris virgata*). By 2000, fewer than 3600 individuals and 4 subspecies in only ~7% the historic range remained. Though Caspian Tiger once occupied the largest geographical range, tiger bounties in the Soviet empire and habitat/ecosystem destruction for

agriculture caused Caspian Tiger extinction by 1960. BUT ALL HOPE IS NOT LOST! Through landscape conservation efforts, Nepal and India have increased tiger populations (up 61% and 31%, respectively) and conservationists are working to re-introduce related tiger subspecies into Caspian Tiger's former habitats.



Giant Squid retains home habitat advantage and hunts in the ocean deep. MEANWHILE... in the Golestan National Park in Iran, Tiger lays curled next to a streamlet. R2's fight against Boar left Tiger with a jagged-edged, tusk puncture wound in his belly. Wounded and unable to hunt, the water streamlet has hydrated Tiger, but he can't consume the minimal 5.2kg/day of prey to avoid starvation. Instead, Tiger is breaking down his own body fat and muscle to provide fuel for his brain and other key organs. Tiger's body is "eating" itself, a process known as catabolism, that allows animals to endure during short-term periods of food disruption.

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But Tiger is not alone. TIGER'S WOUND IS CRAWLING WITH MAGGOTS! Flesh flies (*Sarcophaga*), coffin flies (*Megaselia*), and screwworm flies (*Chrysomya*), all found in Iran, lay eggs in nutritious, delicious, decaying flesh for young to consume during larval development. Tiger is experiencing WOUND MYIASIS, a parasitic infestation of maggots (dipteran larvae) that can affect humans, domestic animals, and wild animals... INCLUDING TIGERS. Tiger's warm, still-living body speeds up the life cycle of the coffin flies. At lower temperatures the development to adulthood would be ~3 weeks, in the warm body temperature of the lethargic tiger, the earliest laid eggs are now 3rd instar larvae!

ALL OF A SUDDEN Tiger finds himself chest deep in shallow, warm coastal waters of the BAHAMAS! Specifically, a beach of NW Exuma Island. TIGER IS CAUGHT IN A RIPTIDE! Public Safety Announcement: Riptides can form even in clear weather, practice beach safety and know how to spot and escape riptides! These warm, shallow waters are not good for a buoyant cephalopod like Giant Squid... increased ambient temperatures can lower blood oxygen levels fourfold (due to arterial desaturation). BUT Giant Squid is BELOW the sea shelf, 300m down in the Great Bahama Canyon! This canyon is a steep-sided basin with depths reaching 6,000 feet (or ~5379 stoats), possibly the world's highest canyon walls. Here Giant Squid hunts for shoals of silvery, shimmery fish.

Although an adept swimmer, Tiger tires quickly in his current condition, and his paddles grow weaker

at the water surface of the Grand Bahama Bank!

The wound maggots have booty breathing holes (spiracles) that allow them to continuously feast but can't breathe submerged in ocean water. The maggots are drowning and saltwater flushes the maggots from the boar tusk wound. Deep below, the beaked mouth of the Giant Squid feasts on shimmery fish. Above turquoise waters abruptly shift to deep blue as Tiger drifts INTO THE TONGUE OF THE OCEAN!!! A last gasp and Tiger is "swallowed" into the Oceanic Abyss. GIANT SQUID OUTLASTS CASPIAN TIGER! Narrated by Katie Hinde, Chloe Josefson, and Marc Kissel.



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We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

-Aldo Leopold, Conservationist



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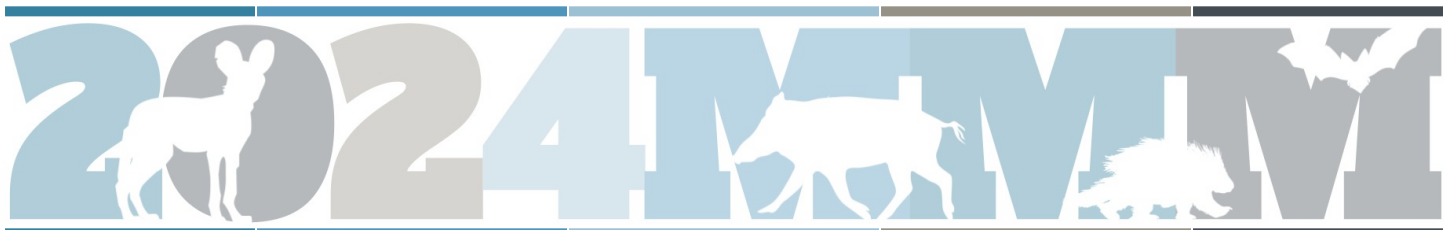
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**READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates**



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Jessica Popescu

@JessPopescu

#2024MMM

SWEET 16

EMOJI BATTLE



7:23 PM · Mar 27, 2024 · 157 Views



# COMBATANT ARTWORK



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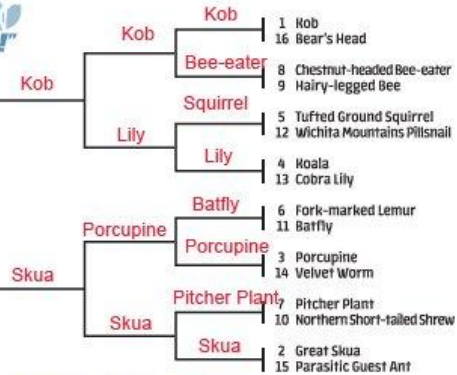


ALL TOURNAMENT INFO:  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
 NOTE: MMM includes many non-mammal species

EPIC ANIMALS



RAINBOW COLLECTION



CONNOISSEUR CRITTERS



TAKE A BOW

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March 28, 2024

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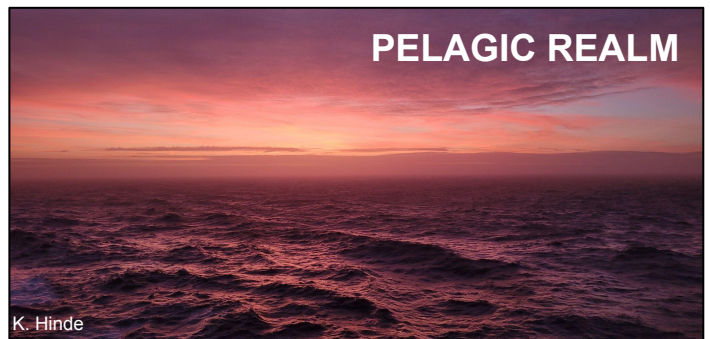
# SLITS TRAIT

Tonight is the beginning of random habitat assignment for combatant encounters that apply in the Elite Trait, the Final Roar, and the Championship. The habitats for 2024 are the PELAGIC REALM, TIDEWATER GLACIER, PEATLANDS, or SAVANNA WOODLAND!

**Tidewater Glacier:** In polar regions glaciers can reach the ocean where saltwater intrusions below and beside can cause icebergs to cleave off from the main glacier. Natural ice dams can form behind ice barriers that eventually burst causing deluges of freshwater into marine ecosystems. Polar regions are some of the most impacted by global warming, speeding glacial movement and melting.



**Pelagic Realm:** The open ocean from surface to sea floor are the pelagic realm. Within this realm, the ocean has different levels of the water column. The nearest to the surface where sunlight penetrates is the epipelagic zone and sealife is concentrated here as the primary producers (phytoplankton) rely on sunlight for photosynthesis. Less sunlight reaches the twilight depth (mesopelagic zone) and no sunlight reaches the midnight depth (bathypelagic zone). Some areas of oceans descend down to the abyssal and hadal zones.



**Peatlands:** Peatlands are a type of wetland where plant matter decomposes slower than material is added. In temperate areas, peatlands form under high precipitation / low temperature patterns while

# ELITE TRAIT & RANDOM HABITATS

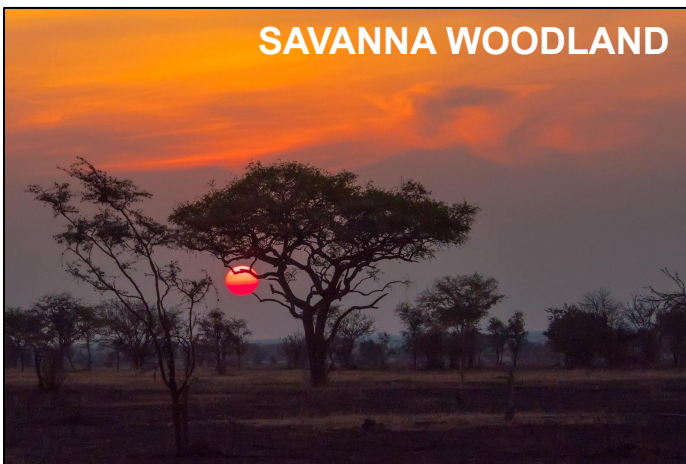
in tropical areas peatlands form in high precipitation / high temperature. Peatlands are 3% of earth's land surface, but one of the most important carbon sinks for mitigating greenhouse gases & global warming.

K. Hinde

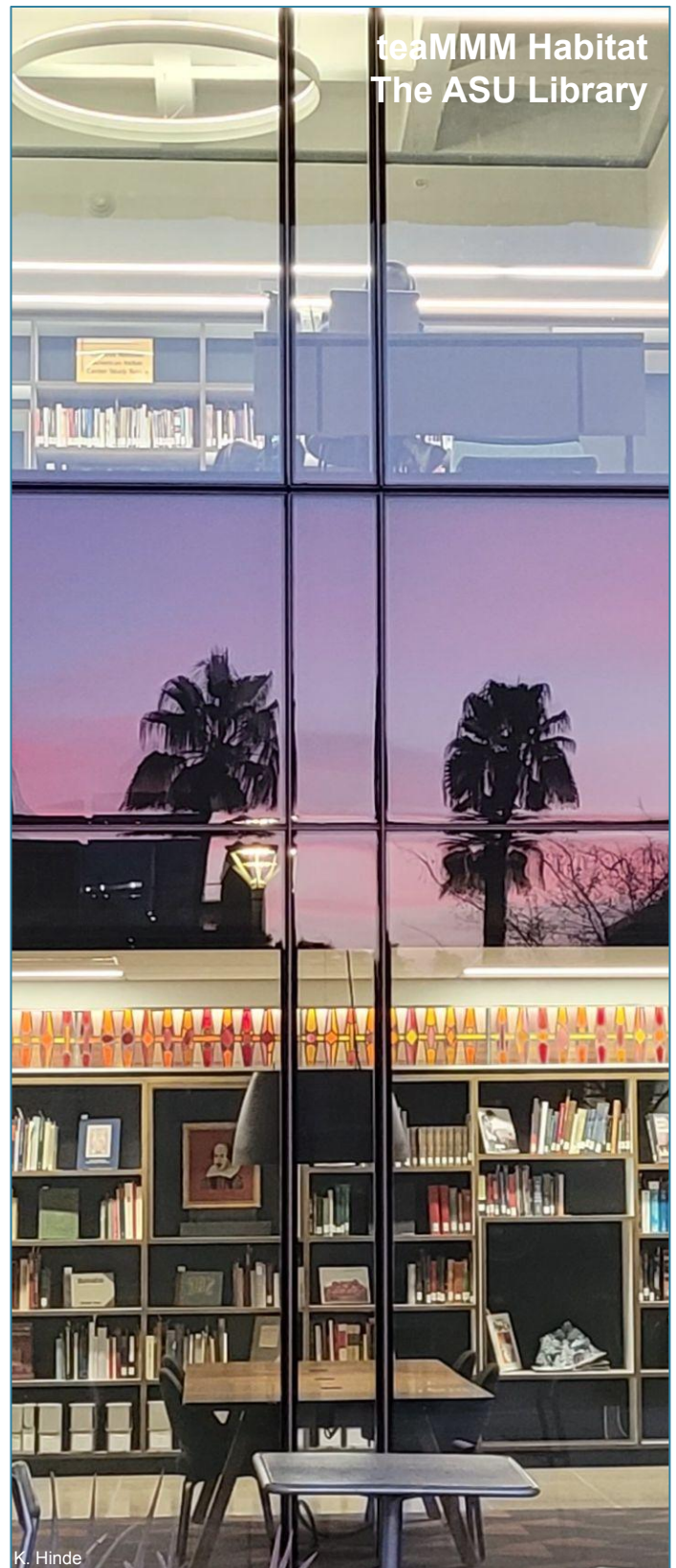


**Savanna Woodland:** These habitats involve wooded areas in which trees provide only partial canopy over grassland. Such areas can be transitions zones between continuous forest and desert and reflect areas that often experience intermediate amounts of water directly through seasonal rains or from regions at higher elevations.

## SAVANNA WOODLAND



Savanna Woodland photo by Anita Ritenour CC-BY 2.0; Tidewater Glacier photo by DCheretovich, public domain / Wikimedia Commons; pelagic realm & peatlands photos by K. Hinde



# ELITE TRAIT & RANDOM HABITATS



PENGUIN CLASSICS

MARCH MAMMAL MADNESS

2024 Elite Trait

## African Painted Dog (1) vs. Mantis Shrimp (6)

African Painted Dog (*Lycaon pictus*) once widespread throughout sub-Saharan Africa was able to succeed in every sort of habitat EXCEPT rainforest. Rainforest presents challenges to this persistence, cooperative hunter: it's hard to chase ungulates to exhaustion & forest distorts vocalizations. African Painted Dogs use dens when pups are young & select den sites in rocky areas or Mopane-dominant forests that reduce risk of lion predation on pups, even if it means longer

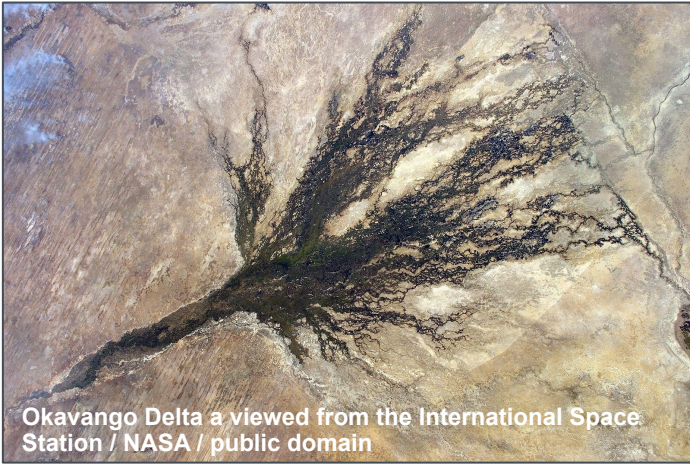
"commute" times to their preferred ungulate hunting grasslands. Peacock Mantis Shrimp (*Odontodactylus scyllarus*) are well known for their visual system with compound eyes. They have an innate preference for colors that we perceive as "yellow." When presented with a choice between colored plastic bricks (i.e. Lego!) they went with the yellow ones.



Mathias Appel / Wikimedia Commons / Public Domain

Tonight's Random Habitat location is... THE SAVANNA WOODLAND! Specifically the dry savanna woodlands of the Okavango Delta of Botswana that "form a transition zone between the Okavango Swamps and the Kalahari Desert" conveniently home habitat for African Painted Dog (Tedder et al. 2014). In the Okavango Delta, 6000 square kilometers are permanently flooded wetlands, with another 6000 square km of surrounding seasonal floodplains with mixed woodland grasslands. The Okavango Delta is a vast inland basin in which seasonal surges of water come from the Angola highlands, flooding the basin, but flowing waters run dry & evaporate before reaching the ocean. These closed water systems are called endorheic basins. Within this

# ELITE TRAIT & RANDOM HABITATS

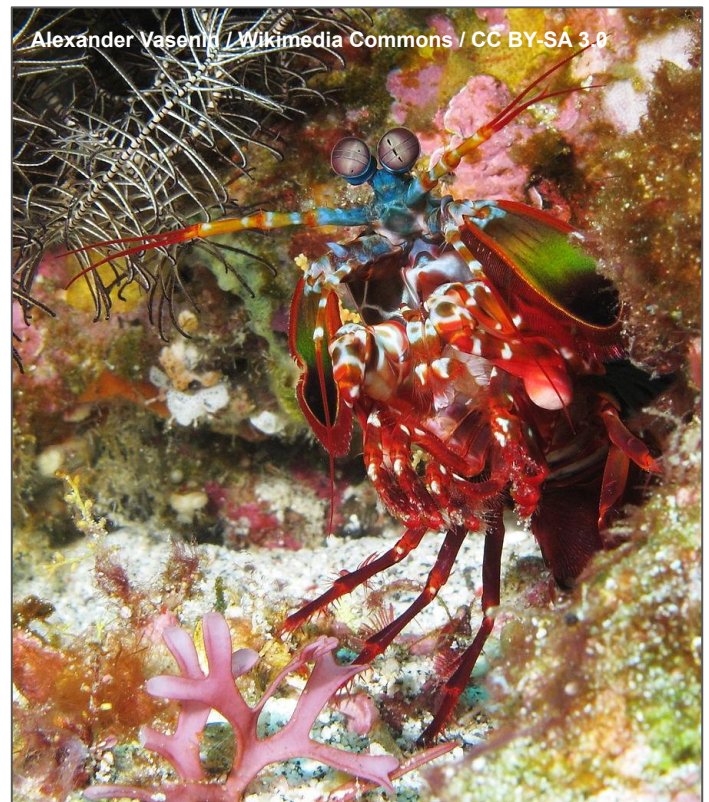


system, salt is left behind as water vaporizes into the atmosphere. By the end of the dry season with extensive evaporation, including through plants, salinity increases, especially in the distal regions furthest from the flood surge. Thousands of seasonal islands within the Okavango system have high salt concentrations, some even develop a salt crust that kills plants other than salt-tolerant grasses.

TONIGHT several African Painted Dogs in the pack, having not eaten much before Lions stole their Wildebeest last night, are hungry and have successfully rallied the pack to the hunt! During their commute, the African Painted Dogs move as a unit, at first a bit slow but soon begin to trot. Like his packmates, Combatant African Painted dog initiates "active searching mode" as the pack approaches their favored hunting grounds (Jordan et al. 2023). March is the last month of the wet season & Tuesday's scattered thunderstorms have left scattered puddles on the landscape.

Within African Painted Dog's favored hunting grounds, #MMMagic translocates the Peacock

Mantis Shrimp to a small, salty puddle within a salt crust area conveniently at a salinity level of 32-36 parts per thousand. African Wild Dog and his packmates spot a lechwe (*Kobus leche*), one of their preferred prey! "The hunting pack halts, lower their ears back against their heads—which they also lower toward the ground—and slowly progress directly toward the prey, keeping a fixed gaze on their quarry" (Jordan et al. 2023). The lechwe "makes a discernible and characteristic head movement, before performing a quick about-turn to flee!" (Jordan et al. 2023).



In the woodland savanna of Botswana, African Painted Dogs run together toward prey. Combatant African Wild Dog at top speed takes the lead, paws churning into the muddy ground, & bites the lechwe by the nose, bringing it off balance, the

# ELITE TRAIT & RANDOM HABITATS

rest of the pack converges on the lechwe's gut, killing the ungulate by disemboweling! Combatant African Wild Dog didn't even notice his paw had CRUSHED Peacock Mantis Shrimp in his final predatory burst sprint at lechwe. African Painted Dog, in excitement of the kill, "twitters a high-pitched, birdlike chatter" vocalization to packmates! (Estes & Goddard 1967). AFRICAN WILD DOG CRUSHES MANTIS SHRIMP! Narration by Katie Hinde, Marc Kissel, & Alyson Brokaw.



## Kob (1) vs. Great Skua (2)

On average, Kob (*Kobus kob*) spend 90% of their daytime hours eating or laying down although juveniles also spend time play-fighting. The tendency of Great Skua (*Stercorarius skua*) to steal food, consume bird carcasses, & group bathe in lochs increase their risk of exposures to avian flu. The 2022 Avian Flu outbreak caused a 57% decline in local population in Scotland.

TONIGHT Kob is selectively grazing, strolling amongst several dozen bushes and grasses, identifying the most preferred items to balance his nutritional intake WHEN SUDDENLY... Great Skua glides above the St. Kilda Archipelago. This avian

Pirate of the Sky and Sea scans for her next likely meal. She may choose violence, she may choose scavenging, WHEN SUDDENLY...



MMMagic translocation delivers Kob & Great Skua to their randomly determined encounter habitat... PEATLANDS! Peatlands are 3% of earth's land surface, but one of the most important carbon sinks for mitigating greenhouse gases & global warming. Peatlands occur across continents, providing essential habitat to many species. In Ireland, peatlands are 16% of the land area, and our combatants find themselves at the Ballybetagh Bog of South County Dublin a few miles inland from the Irish Sea.



# ELITE TRAIT & RANDOM HABITATS

Deprived of avian prey, Great Skua spots a young Irish hare, *Lepus timidus hibernicus*, the only endemic lagomorph of Ireland, likely present since the late Pleistocene, & similar to the brown hares that Great Skua sometimes eat.



Irish Hare / Alan Wolfe / Wikimedia Commons / CC BY 2.0

Kob is more nervous here. Although the combination of grassland & wetland habitats with woodland along perimeters found in his range in the W-Arly-Pendjari Complex, World Heritage site of Burkina Faso, Benin, & Niger, HERE KOB IS ENTIRELY ALONE!

Great Skua uses her well-honed lethal attack techniques for kittiwake nestlings! Great Skua glides towards the young hare, brakes & hovers on approach, & grasps the young hare with her sturdy curved bill.

Kob, like many medium-sized ungulates, finds greater safety in numbers! Being with others increases vigilance & predator detection... & the more there are, the lower \*individual\* risk of being eaten by a predator (dilution of predation risk).

Great Skua, still using her lethal techniques for kittiwake nestlings, takes skyward with the young hare grasped in her bill... for a quick flight to the center of the peatland where a slowly flowing stream runs atop and through the peat.

At home in the hostile landscape prowled by lion and hyena, Kob spends time with other kob, and will routinely co-occur with bushbuck along waterways.

Great Skua, continuing her lethal tactics, plunges the young hare into the water, "using her bill and feet to push it below the surface, pecks at it, & holds it down until drowned... about 1-2 minutes" (Andersson 1976). #2024MMM

Across the peatland Kob sees... are those bushbuck?!?! NO- THEY ARE FALLOW DEER!! Kob begins to trot across the peatland toward the only sorta familiar faces in this unfamiliar habitat!



Fallow Deer/ Bob Ford / Wikimedia Commons / CC BY-SA 2.0

After "killing the prey Great Skua tears off <fur> & rips open the belly by pulling backwards with jerky head movements." (Andersson 1976) #2024MMM

Kob, in his hurry to join the Fallow Deer has plummeted into the deepest of the squishy, unstable peat! Kob's dainty hooves do little to distribute his body weight & he is sinking, sinking, sinking... INTO THE VERY BOG THAT CLAIMED DOZENS OF IRISH ELK THOUSANDS OF YEARS AGO!!!! and some reindeer! Peatland bogs, because of the chemistry of the ecosystem, greatly slow processes of decay of organic material. Both wild animals and ancient humans have been recovered & studied in ways that bone and fossil

# ELITE TRAIT & RANDOM HABITATS

remains make difficult. Peatlands, along with even more preserving permafrost, are Nature's Natural History Collections. Moreover time sequences of insects, pollens, & SPORES reveal past paleoclimates & paleoenvironments. Fully submerged, Kob kicks out one... last... time... and Bear's Head fungus spores dislodge from his dainty hoof... but like the ungulate, spores now rest in nature's long-term preservation storage.

"At that hour when all things have repose,  
O lonely watcher of the skies,  
Do you hear the night wind  
and the sighs"

of Great Skua spending another 5 minutes finishing her meal. (with apologies to James Joyce 1907). SKUA OUTLASTS KOB! Narration by Alyson Brokaw, Tara Chestnut, Brian Tanis, & Katie Hinde.

**Northern Elephant Seal (1) vs. Great White Shark (3)** - In regions of Great White Shark (*Carcharodon carcharias*) predation on Northern Elephant Seals (*Mirounga angustirostris*), seals modify their behavior, entering coastal waters to and from haul-out beaches, prioritizing hunting along the ocean floor instead of the middle or top of the water column. Great White Sharks are primarily solitary with limited social dynamics. When they aggregate together these are often random associations, occasionally assorting by age/size more than any kind of social affinity.



Elias Levy / Wikimedia Commons / CC BY 2.0



Mike Baird / Wikimedia Commons / CC BY 2.0

Tonight Northern Elephant Seal and Great White Shark meet in their randomly selected habitat... THE PELAGIC REALM! Specifically the North Pacific Ocean, to the west of the Farallon Islands National Wildlife Refuge. Great White Shark is one of the top predators of an elaborate food web from the microscopic microalgae (phytoplankton) that float near the surface for photosynthesis to the zooplankton that consume the phytoplankton to the larger animals that eat zooplankton. Great White Shark swims in the ocean investigating what she encounters in the ocean water column. From bird activity at the surface to movement on the ocean floor (to certain depths), Great White Shark veers toward the animals/objects to see IF FOOD.

With the mating season over, Northern Elephant

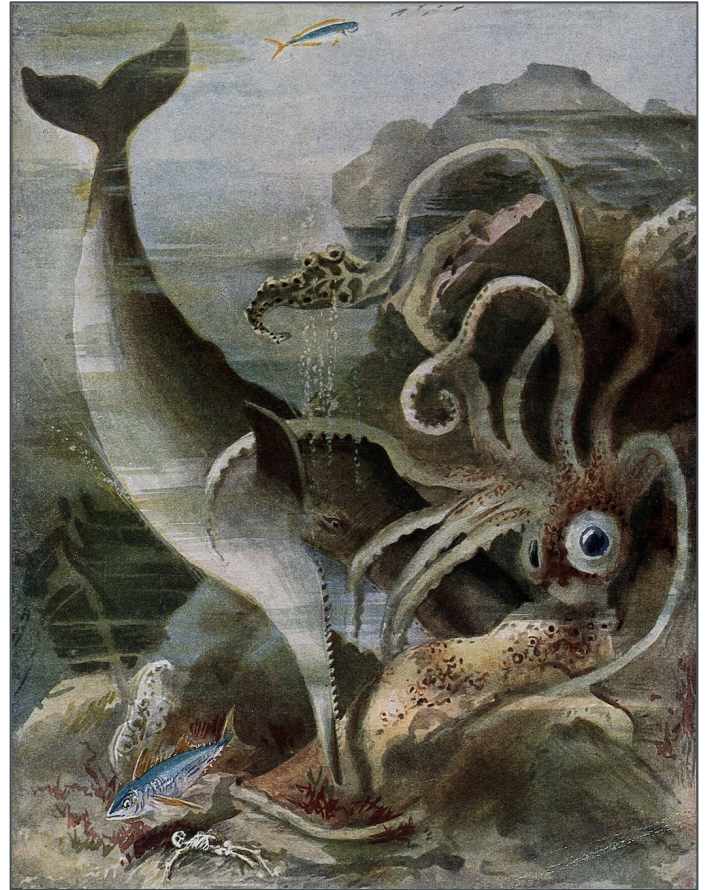
# ELITE TRAIT & RANDOM HABITATS

Seal returns to the ocean with a mighty hunger. After fasting for over 3 months, he has lost 1000kg from his initial ~2200kg in December 2023. Northern Elephant Seal has been deep diving for his squid dinner. Elephant Seals are the deepest diving of the pinnipeds and dive deeper than most whales! Bull Elephant Seals also dive deeper than females. Northern Elephant Seal is returning from a dive to 770m, holding his breath for 45 minutes. He has more red blood cells with proteins to carry oxygen (hemoglobin), more oxygen-binding proteins in muscle (myoglobin), and a lot more blood! As Northern Elephant Seal dived deeper, his spleen released sequestered red blood cells that delivered waves of oxygen to his tissues!

Northern Elephant Seal surfaces and takes a deep breath of air. But he will only stay at the ocean surface for about 5 minutes, both to maximize hunting time and to limit time as an open target for orcas and great white sharks at the top of the water column. A quick breath and Bull Northern Elephant Shark begins his dive toward another course of calamari when GREAT WHITE SHARK DELIVERS A PREDATORY BITE INTO THE SHOULDER OF NORTHERN ELEPHANT SEAL!

GREAT WHITE SHARK BITES ALL THE WAY DOWN TAKING A MASSIVE CHUNK FROM NORTHERN ELEPHANT SEAL! With twice as much blood for body mass, and all the extra hemoglobin, Northern Elephant Seal's exsanguination pulses a lot of dark red into the ocean waters. Tales tell that Mariners once called

the islands the "Devil's Teeth" and tonight Great White Shark tears chunks from the fallen pinniped. GREAT WHITE SHARK EATS ELEPHANT SEAL! Narrated by Katie Hinde, Jessica Light, Marc Kissel, and Lara Durgavich.



**Sperm Whale (1) vs. Giant Squid (2)** - Although considered vulnerable to extinction, Sperm Whales (*Physeter macrocephalus*) are the most common large cetacean swimming earth's oceans today. An apex predator in pelagic realm ecosystems, Sperm Whales collectively eat an estimated ~110 million TONS of cephalopods per year.

# ELITE TRAIT & RANDOM HABITATS

Giant Squid (*Architeuthis dux*) are buoyant because of their ammonium ion concentrations. "Without the ammonium ions, the squid are heavier than seawater... but w/ them the animal can maintain its level in the water w/o having to expend energy by constant swimming."

Tonight TWO cephalopod hunters swim the pelagic zone near New Zealand as both Sperm Whale AND Giant Squid are predators of octopus, cuttlefish, and squid. Giant Squid even cannibalizes other giant squid. Sperm Whale is slowly swimming when his stomach clenches and he vomits out SQUID BEAKS! Unlike our friend the Pitcher Plant (RIP) Sperm Whales can't digest the chitin that make up squid beaks. Unless regurgitated, or passed as ambergris, squid beaks can accumulate by the hundreds in Sperm Whale stomachs. Now with less squid beak, Sperm Whale begins one of his foraging dives into the submarine canyon, using echolocation clicks to suss out the presence of prey in the water column to optimize his hunt search.



Giant Squid swims with eyes open wide. Her eyes, the size of dinner plates, are not to primarily detect



Couple records giant squid while diving in Japan

Diving instructor Yosuke Tanaka, 41, and his wife Miki, 34, were on a day trip when locals at a fishing shop told them about sightings of the elusive 8.2ft-long beast lurking off the coast of Toyooka City. (CREDIT: ViralPress/yosuke\_tstyle)

prey or mates but to (possibly) see just beyond the sonar range of Sperm Whale to avoid her greatest predatory danger in the ocean..

A flying squid of the genus *Todarodes* swims in the canyon. Giant Squid's feeding arms shoot forward over 30 feet, the thick clubbed ends covered in hundreds of toothed 2-inch suckers, to grasp her flying squid prey! BUZZZZZZZZZZ!!

Sperm Whale's sonar clicks become so rapid they BUZZ as he predatorily bursts at the flying squid. SPERM WHALE TEETH CHOMP DOWN ON FLYING SQUID AND ONE OF GIANT SQUID'S FEEDING ARMS! Giant Squid with her other feeding arm slashes at Sperm Whale, raking his eye with her toothed sucker club... adding new lacerations over his scars from previous fights with other giant squid before!

Sperm Whale swings his head and swallows the flying squid as Giant Squid rips back her trapped feeding arm and pivots to flee! Even though Giant Squid are likely less than 2% of Sperm Whale diet, the mighty Sperm Whale surges after Giant Squid! SURF & SURF TONIGHT!



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*“Let the rain kiss you. Let the rain beat upon your head  
with silver liquid drops. Let the rain sing you a lullaby.”  
–Langston Hughes*



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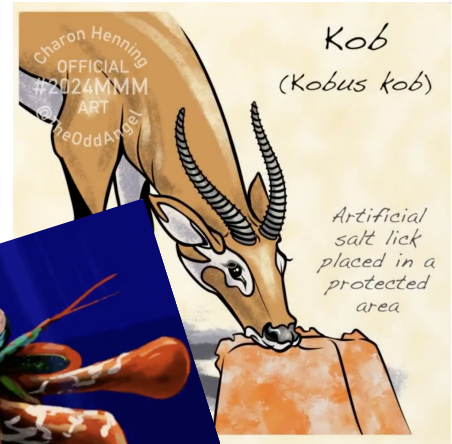
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**READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates**



# COMBATANT ARTWORK

THANK YOU ART teaMMM!



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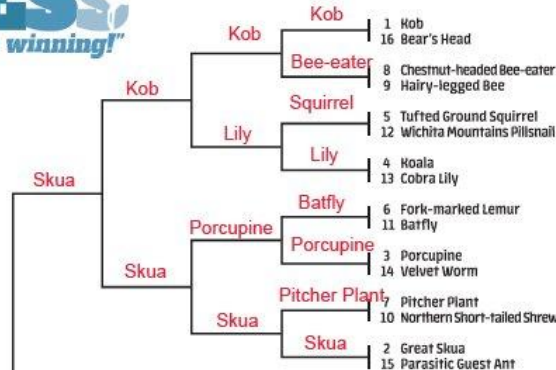


ALL TOURNAMENT INFO:  
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 NOTE: MMM includes many non-mammal species

EPIC ANIMALS



RAINBOW COLLECTION



CONNOISSEUR CRITTERS

TAKE A BOW

MMM created and directed by Professor Katie Hinde, Arizona State University

Layout by Assi. Prof. William Nickley, The Ohio State University  
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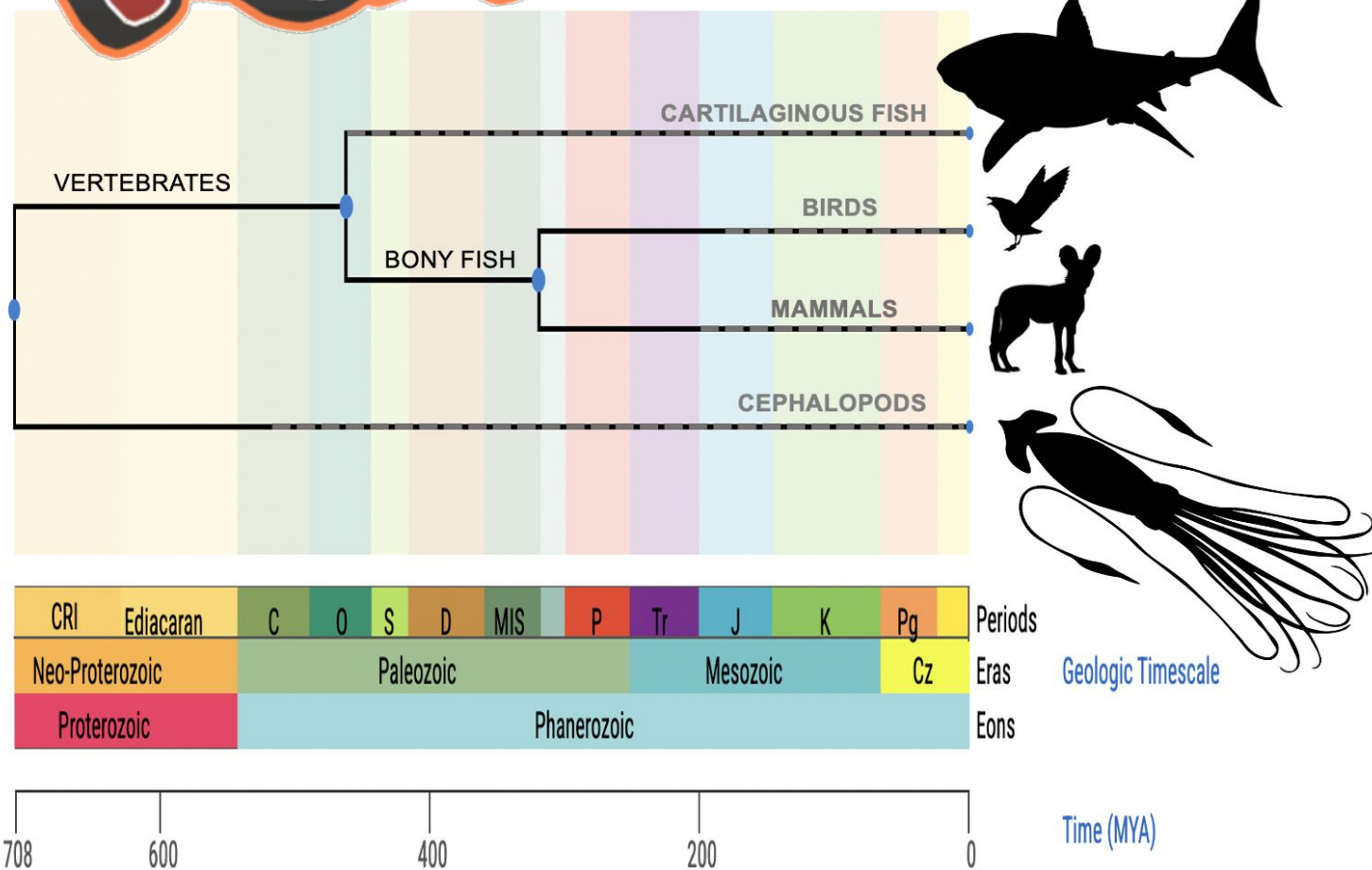
Excuse me, I was told there would be



MARCH MAMMAL MADNESS 2013-2024

# FINAL ROAR

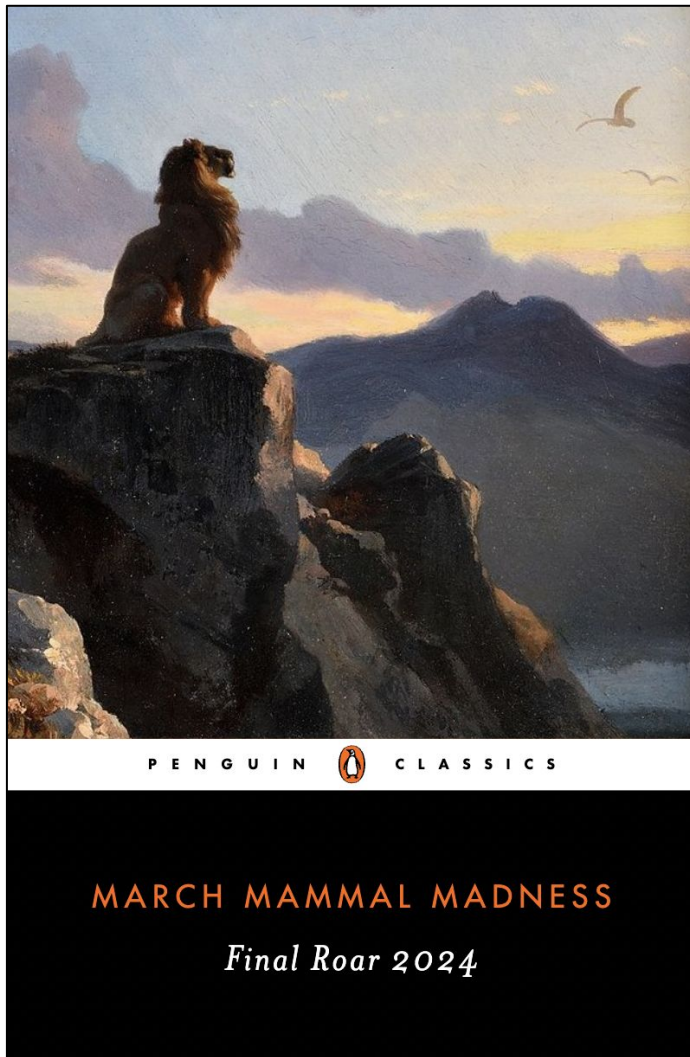
TONIGHT only four combatants remain! Excitingly, Great White Shark, Great Skua, African Painted Dog, and Giant Squid all represent very different branches of the family tree! Skua & Shark shared a last common ancestor ~462 MYA and African Painted Dog and Giant Squid shared a last common ancestor ~708 MYA well before the Cambrian Period.



**Phylogenetic Relationships among 2024 Final Roar Combatants.** Phylogeny image on Geological and Time scale generated at TimeTree.org; animal silhouettes available at Phylopic.org.

# FINAL ROAR & RANDOM HABITATS

And we know what you're thinking- is there a free digital poster download of the full phylogeny of ALL N=641 combatants in the history of the tournament since 2013!? [YES THERE IS](#), thanks to Dr. Albert Chen, University of Cambridge! Delve into the details of MMM cladistic representation! How many Felidae have been featured? Bask in the glory of the over-representation of Primates! Could there even be more bats than that? Has MMM really had that many non-mammals!?



Penguin Classics Cover Generator <https://penguin.jos.ht/>

Erik Christensens / Wikimedia Commons / CC BY-SA 3.0



**Great Skua (2) vs. Great White Shark (3)** - When Great Skua (*Stercorarius skua*) gather on their "club grounds" (Andersson 1976) during the breeding season, a key threat signal is the long call while stretching the neck forward, opening the beak, and lifting their wings back and open. Great white sharks (*Carcharodon carcharias*) have been observed engaging in a water slap fight that may be a social signal of prey item ownership. As one great white shark swims near a shark with a recently killed seal, the first slaps their tail against the surface splashing and the other responds and the slaps continue.

After Great Skua valiantly defeated Stag in the Irish peat bog, she is soaring toward St. Kilda, a journey taking her 322 miles due northwest toward the outer of the Outer Hebrides when SUDDENLY...

After Great White Shark valorously defeated Northern Elephant Seal, one of her most preferred foods, she gorged for several days when SUDDENLY...

# FINAL ROAR & RANDOM HABITATS



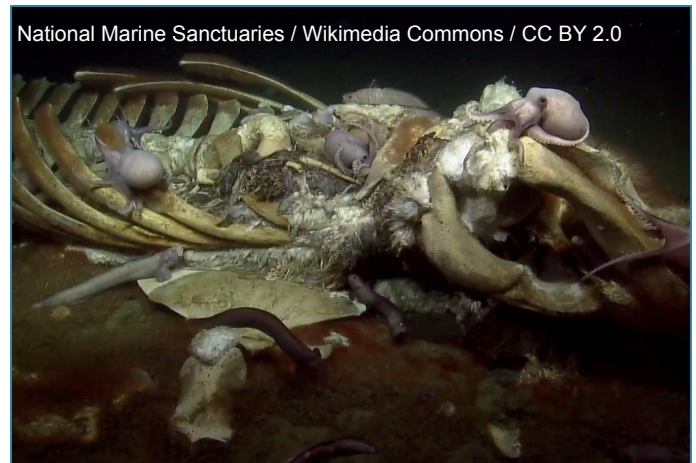
Hermanus Backpackers / Wikimedia Commons / CC BY 2.0

MMMagic portal translocates Great Skua and Great White Shark to their randomly assigned habitat: TIDEWATER GLACIER! Specifically to a tidewater glacier in Prince William Sound in Alaska. At latitude 60°N, this is the cusp of the northerly range of Pacific great white sharks in the Bering Strait and Alaskan waters. Great Skua can breed on islands of the Barents Sea, such as the islands of Svalbard, as far north as latitude 77.8, so she feels very much adapted to this scene.

But Great Skua and Great White Shark are not the only animals interested in the carcass of the sperm whale; a great cacophony of sea birds and sharks are already feeding at the carcass, near the fatal ship strike that eliminated the cetacean from the tournament during the Elite Trait.

Inside the whale carcass, tissue decay and microbe activity make gases that float the whale at the water's surface. "A carcass may float for several seeks and exude a continuous slick of blood and oil that can attract sharks from long distances." (Long & Jones 1996). In the coming weeks, this

whale may float to the shore. A humpback whale carcass on the beach of Glacier Bay National Park, Alaska, was scavenged by bald eagles, gray wolves, ravens, crows, and gulls, as well as many, many intertidal invertebrates. More often though, for a whale carcass scavenged at the surface, eventually the gases release and the whale sinks down... down... down... to the ocean floor where the 'whale fall' supports a rich ecosystem for decades. Over time different communities of animals that specialize in consuming decaying skin, blubber, muscle, and organs will live at the whale fall, then bacteria that decompose fatty bones dominate the ecosystem. The collapse of whale populations from whaling activities in the 18th and 19th Centuries has also collapsed the key food source for these deep sea ecosystems.



National Marine Sanctuaries / Wikimedia Commons / CC BY 2.0

At the floating whale, hungry Great Skua immediately lands in the water and paddles over to a large male great white shark already feeding on the carcass. As he tears chunks of flesh from the dead marine mammal, blubber bits go flying, quickly scooped by Great Skua. Combatant Great White Shark assesses the scene longer; she swims

# FINAL ROAR & RANDOM HABITATS

along the carcass for about 17 seconds. Here in Alaska, a lot of the great white sharks are BIG BOYS (and girls) that are nearly the 6m length of combatant Great White Shark.

GRRRRROOAAAAAN!!! CRRRRAACCCCK!!!  
RRRRRUUUUUUMMMMBBBLLE!!

"There's nothing else like the moment a giant hunk of ice calves from the face of a glacier and then crashes into the sea.... There's the groan of tortured ice, the artillery-shot crack as it shatters, the rumble of its collapse" (Alaska Org, n.d.).



St. Louis Julie USFW / Wikimedia Commons / CC 0

AND THE RESULTING WAVE OF WATER DISPLACED BY ICE WASHES OVER THE FLOATING WHALE CARCASS!

But very quickly the sharks and seabirds return to the floating carcass. Combatant Great White Shark submerges to swim at a 45 degree angle toward the whale's lower abdomen, a favored feeding section. Combatant Great White Shark surfaces from directly below floating Great Skua!

Great Skua flies away, as they typically do from

surfacing sharks! Combatant Great White Shark lifts up out of the water, biting deep into sperm whale carcass, and thrashes her head to tear away about 20kg (45lbs, 91 stoats) of meat she swallows down! She continues to feed peacefully near another great white shark... as they can.



Fallows C, Gallagher AJ, Hammerschlag N (2013)

Great Skua lands in the whale slick looking for morsels of floating blubber... beyond the field of battle! GREAT WHITE SHARK DISPLACES GREAT SKUA! While natural whale fall is important for deep sea ecosystems, ship strike and other human-caused whale mortality hurt whale population health. [Citizen science can be part of the solution!](#) Narrated by Jessica Light & Katie Hinde.

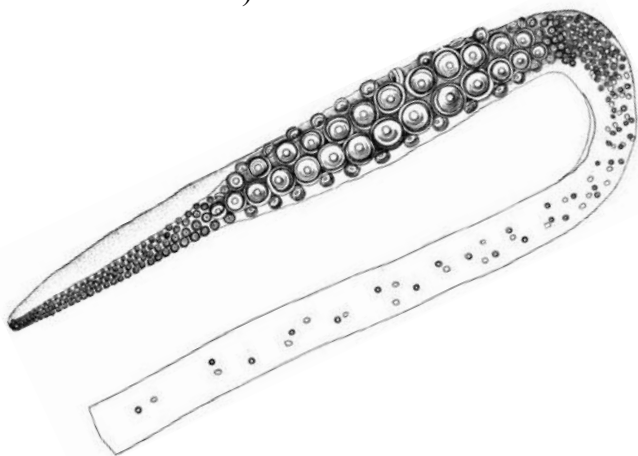


# FINAL ROAR & RANDOM HABITATS

**African Painted Dog (1) vs Giant Squid (2)** - In African painted dogs (*Lycaon pictus*), typically a dominant pair breeds & helpers cooperatively support the care, protection, and feeding of pups. Before pups are able to travel with the pack, but old enough to chew, adults return from a kill to the natal den and regurgitate meat for pups who give begging cries and lick at the adult's muzzle.



"All the suckers of a giant squid are shaped like a suction cup. Each sucker is set on a muscular pedicle, or short stalk, that can be moved by the animal. The perimeter of a sucker is rimmed by a sharply toothed ring of chitin... Imprints or scars from squid suckers have been found on the skin of sperm whales and even in their stomach." (Roper & Boss et al. 1982).



Tonight African Painted Dog is with his pack in Moremi Game Reserve in the Okavango delta of Botswana, the pack is engaged in a particularly enthusiastic rally! African Painted dog is about to depart with the pack when SUDDENLY...

In the twilight zone of the ocean, Giant Squid (*Architeuthis dux*) is finishing a course of squid dinner. Her feeding tentacles have brought Giant Squid's prey to her mouth where her sharp beak breaks her dinner into small pieces so they can fit down her esophagus that passes through her donut-shaped brain! Giant Squid's toothed tongue (radula) has teeth that slope backward toward the gut. Soon no morsels are left and Giant Squid prepares for an ambush on a flying squid of the genus *Todarodes* when SUDDENLY...

The combatants are MMMagically translocated to the randomly selected habitat: PEATLANDS! "Peat soils contain more than 600 gigatonnes of carbon which represents up to 44% of all soil carbon, and exceeds the carbon stored in all other vegetation types including the world's forests" (IUCN, 2021). Tonight's battle peatlands are located at 65.247°S, 64.085°W on Cape Rasmussen of the Antarctic Peninsula! This peatland occurs across the channel from the Vernadsky Research Base where weather and temperature have been recorded every 3 hours continuously since 1947, the longest ongoing record of Antarctic climate.

Arriving first, African Painted Dog finds himself in a snowstorm! The forecast calls for 4-8 inches of snow accumulation with 25mph sustained winds. "Hoooooooooooo!" Alone in the small

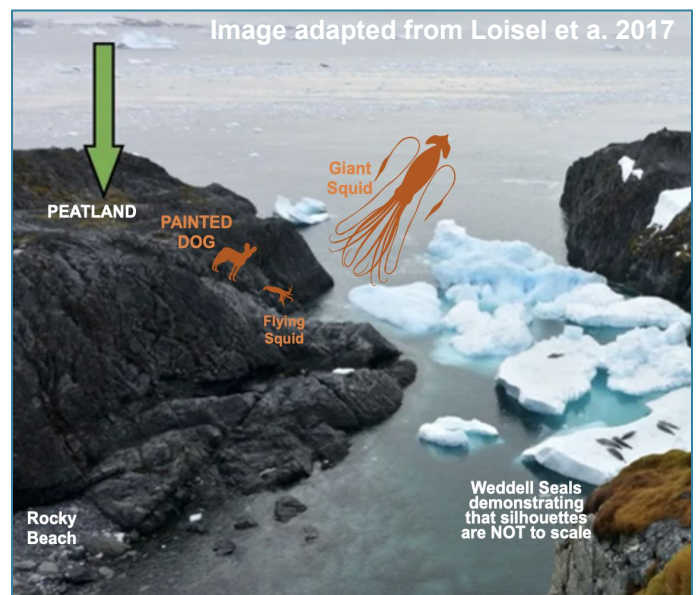
# FINAL ROAR & RANDOM HABITATS

patch of Antarctic peatland, separated from his pack, African Painted Dog makes a long distance "hoo-call" to tell his pack that he, specifically, is lost. But there are no hoo-calls in response. African Painted Dog is alone. But the Antarctic wind howls. "Hooooooo!" African Painted Dog tries again, giving his longest hoo-call for 17 full seconds, desperate to reunite with his pack!

Although African Painted Dog's home Moremi Game Reserve has had record lows of 32F/0C, he is not adapted to the Antarctic gale-wind snowstorm, and alone he begins digging a den to escape the elements, moaning in frustration as he digs. Chunks of peat fly over the rocky hillside to land in the ocean inlet below. In mere minutes, African Painted Dog digs down 19.5 inches, his claws gouging through 600 years of peat deposition and hitting the rock below. This peatland began to grow around 2700 years ago and grew 0.1cm per year until 2150 years ago when growth stopped. This quiescence lasted until about 1950, when global warming changed the climate in Antarctica.

Crouched down, the dugout depression could have provided some protection... but unlike the mossbanks on nearby subantarctic islands, this is a true "waterlogged peatland" with a shallow water table (Loisel et al. 2017). For African Painted Dog, laying in water on rock in the snowstorm would only accelerate hypothermia! African Painted Dog crawls toward the edge of the hillside to look for a route down from the plateau. Standing for a better view, a 48mph gust of wind, the TEETH OF A GALE, tosses the 75 lb African Painted Dog tumbling down the steep hillside!

MEANWHILE... Giant Squid has ambushed a flying squid of the genus *Todarodes* through the MMagic Portal into the inlet below the Antarctic peatlands. The nearly 2 foot long flying squid *Todarodes* uses jet propulsion to leap from the water as an escape reaction! Flying squid *Todarodes* collides with the tumbling African Painted Dog, breaking his fall! Giant Squid's clubbed feeding arms had already deployed at flying squid *Todarodes* such that they shoot out of the water... but giant squid's feeding arm reach falls short of the African Painted Dog!



Bruised, but okay, African Painted Dog jumps up, disentangling from flying squid, and begins navigating to the nearby rocky beach in the snowstorm... turning his back on the ocean. A wave from the incoming high tide washes African Painted Dog and chunks of peatlands into the ocean... and into Giant Squid's tentacled grasp! Giant Squid's suckered arms wrap around African Painted Dog...

# FINAL ROAR & RANDOM HABITATS

**\*MUSICAL INTERLUDE\***

*Ruff the Painted Canid  
hunts the inland sea  
Prey fallen in a caught 'em blitz  
in a land called Moremi*

*Together they commuted,  
a pack with wagging tails  
Ruff kept a look out for  
prey's savanna trails  
Kudu, kob, and lechwe  
head-bobbed when they came  
Painted Dogs would cower  
when lions roared out at game*

*Ruff the Painted Canid  
hunts the inland sea  
Prey fallen in a caught 'em blitz  
in a land called Moremi*

*Little puppy begging,  
he loved those rascal pups  
He brought 'em meals at natal den  
& tugged them by the scruff.*

*A story lives forever,  
but not so painted Ruff.  
Poisoned things and gunshot pings  
make way for human stuff.*

*One dark night it happened;  
Painted Canid was forlorn  
And Ruff, that mighty canid,  
shivered in the Austral storm*

*Without his natal kin,  
Ruff could not be brave,  
So Ruff that Painted Canid,  
sadly slipped into his grave...*

**AND SLIPPED RIGHT  
THE HECK BACK OUT!**

After investigating African Painted Dog, Giant Squid's dextrous tentacles release the bizarre furry form! No mammal remains have ever been reported in Giant Squid stomachs, only cephalopods and fish! Swimming quickly to the rocky beach, African Painted Dog scrambles across the rocks made slicker by slushy snow as stormwinds continue to howl! African Painted Dog is running off the field of battle onto the Antarctic Peninsula into soon to be sub-freezing temperatures...

SUDDENLY MMMagic translocation portal returns African Painted Dog to his pack in Moremi Game Reserve! The return of African Painted Dog with his group causes a particularly enthusiastic "greeting ceremony" as the pack members gather nose to nose licking, giving excited twitters, whimpers, buzzes, and noisy gurgles in joyful reunion!

**\*MUSICAL REPRISE\***

*Ruff the Painted Canid returned to inland sea  
MMMagic Portaled in a classic twist to a land called Moremi  
Ruff the Painted Canid, curled beneath the tree  
And warmed by rays & sneezing yeas, and other family glee!*

Beneath the Antarctic peatland bluff Giant Squid swims back to the deeper ocean waters. GIANT SQUID OUTLASTS AFRICAN PAINTED DOG! Narrated by Katie Hinde.



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READ ALL ABOUT IT by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates



Jessica Popescu

@JessPopescu

#2024MMM

FINAL ROAR

EMOJI BATTLE



6:30 PM · Apr 1, 2024 · 309 Views



# COMBATANT ARTWORK



2024 marks TEN tournaments of combatant art by the incredible Illustration Team! Each year Valeria, Olivia, Mary, & Charon awe & astonish us with exquisite portrayals of combatants! Art & nature are essential to human well-being. In this era of AI, art-scraping, & creativity theft, true artistry is more precious than ever.

If you have appreciated the MMM illustrators combatant artwork at any time in the last 10 tournaments, [please thank them with a tax-deductible donation at their newly launched 501\(c\)\(3\)!](#)

Valeria Pellicer  
@VPellicerArt  
[Website](#)

Olivia Pellicer  
@Opellisms  
[Website](#)

Mary Casillas Freisner  
@MaryCCasillas  
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Charon Henning  
@TheOddAngel  
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# CURRENT BRACKET

## OFFICIAL RESULTS

Your Name Goes Here



ALL TOURNAMENT INFO:  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
 NOTE: MMM includes many non-mammal species

EPIC ANIMALS



RAINBOW COLLECTION



English Bracket v1.0

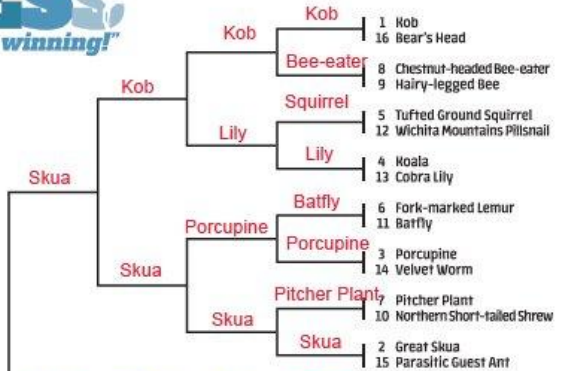


Total / 138 max

MMM created and directed by Professor Katie Hinde, Arizona State University

Layout by Asst. Prof. William Nickley, The Ohio State University  
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CONNOISSEUR CRITTERS



TAKE A BOW



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# 2024 MARCH MAMMAL MADNESS

April 3, 2024

If you're learning, you're winning!

Since 2013



PENGUIN CLASSICS

## MARCH MAMMAL MADNESS

*The 2024 Championship*

It all comes down to this. From a field of 65 combatants, only two remain and will meet TONIGHT on the battlefield of glory. One will be vanquished, one will rise triumphant! In a tournament made possible through the tireless efforts of dozens of volunteer working for many weeks to deliver the performance science that is MARCH MAMMAL MADNESS!

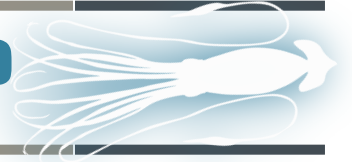
**Great White Shark (3) vs. Giant Squid (2)** - Great White Shark (*Carcharodon carcharias*) course to the Championship was smooth swimming, bycatching Elegant Dancing Frog, startling Swamp Nightjar, observing the solemn passing of Honey Bee, exsanguinating Northern Elephant Seal, & displacing Great Skua. Between gorging on Northern Elephant Seal & ship-strike Sperm Whale, Great White Shark reaches the Championship satiated on marine mammal blubber, an important food for large, adult Great White Shark's metabolic needs & wide-ranging migration. Earlier in her life, Great White Shark would target fur seals when she was more svelte & maneuverable but now focuses more on larger resources.

Peter Benchly, author of the novel *Jaws* & Steven Spielberg, director of the movie, both expressed sustained regret that their fictions motivated gruesome sport-fishing & devastating culls of sharks. On an annual basis, global deaths from shark encounters can be counted on a person's digits & 1/10th as many as fatalities from jellyfish! For perspective, fishing accidents claim 200,000 lives each year.

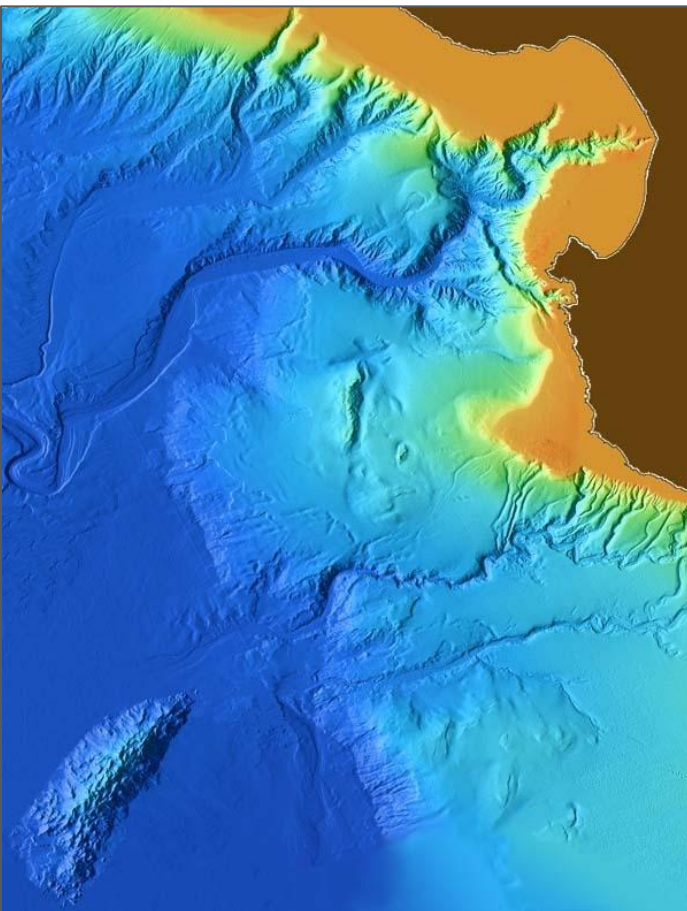
Giant Squid (*Architeuthis dux*) route to the championship was initially smooth sailing with Tarzan Chameleon & Lucy skipping their encounters & Tiger being swallowed by the Tongue of the Ocean due to exhaustion in the face of maggot-infested boar wound and rip currents.



# 2024 CHAMPIONSHIP



Sperm Whale was the major challenge, but ship strike saved the Giant Squid in the Elite Trait, & global warming resurrected the zombie peatland in Antarctica for the Final Roar, so human impacts have been putting up the assists for Giant Squid in 2024's MMM. Although Giant Squid have not been found to consume mammals... some mammals regularly eat them! Fur seal poop in five separate colonies in New Zealand included the remains of Giant Squid, likely younger, smaller ones. And in the Southern Ocean that surrounds Antarctica, the Sleeper Shark routinely consumes Giant Squid.



3-D view of mid-California coast with submarine Monterey Canyon, Davidson Seamount, Shepard Meander / NOAA / public Domain

Tonight in a submarine canyon within the Twilight Zone depth of the Pelagic Realm, a massively large Giant Squid waits in ambush for her squid dinner. But how big is she exactly? Giant Squid washed up on shore or found floating at the surface are often damaged, & the elasticity of their arms can be exaggeratedly stretched. Giant Squid sucker scars on Sperm Whale grow with the cetacean, creating false claims of 60-meter krakens. Scientists estimate that Giant Squid, from fin flappy to distal feeding arm club, possibly max out in rare individuals at 14-15 meters (~45-50 feet) & around 300kg.

Tonight in Alaskan waters, a massively large Great White Shark swims, having completely finished gorging, to the point of purging, at the floating Sperm Whale on Monday. But how big is she exactly? Accurate estimates of Great White Sharks are notoriously challenging bc extreme length & mass can exceed fishing equipment capacities. & attempts risk shark & human injuries, but ~6.5 meters is likely close to max length & 1000+kg.

SUDDENLY both Great White Shark and Giant Squid are #MMMagically translocated to their randomly-selected habitat... the PELAGIC REALM! Specifically, in the Twilight Zone in the Gulf of Mexico at 27.3126°N, 88.9270°W out beyond the zone of thousands of oil & gas platforms. Both combatants have been observed naturally present in the Gulf of Mexico.

Giant Squid arrives hungry... and at a depth of ~400m. She immediately begins to swim upward in the water column to follow the evening rise of her prey species in the diel cycle.



# 2024 CHAMPIONSHIP



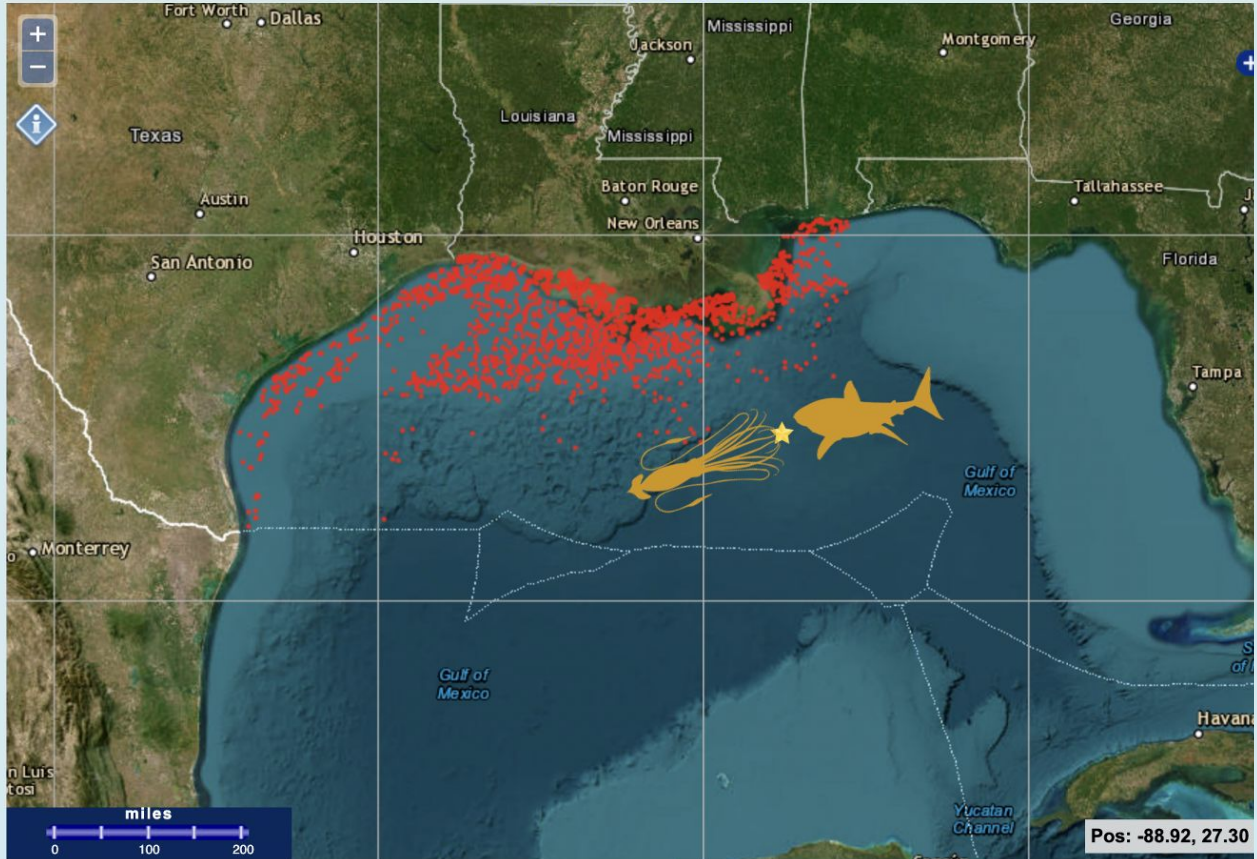
National Centers for Environmental Information  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

## Gulf of Mexico Data Atlas



Basemap ▾ Physical ▾ Biotic ▾ Living Marine Resources ▾ Socioeconomic Conditions ▾ Environmental Quality ▾ Ju

### Oil and Gas Structures



Great White Shark arrives at a depth of ~250m. She arrives well-satiated, her stomach at near capacity, full of the mammal blubber that provides the fuel for her metabolic needs & will sustain her for several weeks. But while the lipid-loaded blubber gives her rich calories, Great White Shark seeks some nutrient balancing for key proteins & carbohydrates readily available in... CEPHALOPODS! Great White Shark begins a slow circling swim to go squid-jigging at slightly deeper depths...

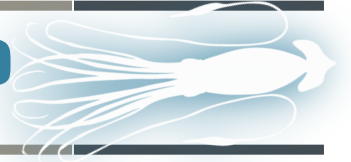
At 300m Giant Squid's feeding arms close around her squid prey! THEN GREAT WHITE SHARK

SNAPS HER JAWS DOWN ON GIANT SQUID'S FEEDING ARMS & SQUID PREY! #DejaVu. Unlike the relatively widely gapped & blunter teeth of the Sperm Whale, Great White Shark's teeth with serrated edges shear into Giant Squid's feeding arms!

Giant Squid BURSTS toward the Great White Shark expanding her crown of free arms wide TO ENVELOP THE SHARK'S FACE! With the incoming attack from the Giant Squid, Great White Shark rolls back her eyes (ocular rotation) to protect them from the oncoming threat! Giant Squid's tentacles, covered with 2.5inch circular



# 2024 CHAMPIONSHIP



saw-like suckers #SecondaryArmature, rip into Great White Shark's skin! Great White Shark thrashes, rolls in the water, releasing Giant Squid's clubbed feeding arms AND BITING DOWN ON THE SQUID'S MANTLE! Two of Giant Squid's suckered feeding arms sucker-scrape toward the Great White Shark's gills!

CEPHALAPOD & SHARK, their biological classes both evolved before dinosaurs, before flowering plants, before Saturn had rings, **THESE TWO NON-MAMMAL OCEAN PREDATORS ARE SEEMINGLY LOCKED INTO MUTUALLY-ASSURED DESTRUCTION!**

But can you imagine:

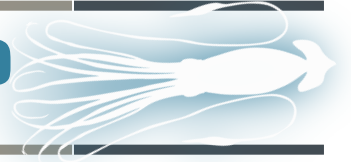


Giant Squid, circular-saw suckered arms wrapping around Great White Shark gouging into tough shark skin! Great White Shark serrated blade teeth protrusion-biting deep into Giant Squid's mantle!





# 2024 CHAMPIONSHIP



**THWUNK!** A QUICKLY SINKING DEAD ALLIGATOR DROPS ONTO THE BATTLING GREAT WHITE SHARK & GIANT SQUID! The reptilian collision startles the Great White Shark into **RELEASING** the **KRAKEN...** correction: releasing the Giant Squid! In a cloud of ink, the injured Giant Squid jet-propulsion flees! Great White Shark circles down to investigate, catching up to the dead alligator, descending in a work basket on a long-line...

At the surface, a research team manages the remotely operated vehicle (ROV) that will remove the alligator from the basket on the sea floor. Another alligator, acquired from the Louisiana



Image from McClain et al. 2019

Dept of Wildlife & Fisheries Alligator Management Program, is being staged by researchers on the boat... to continue their study about how estuarine crocodylian fall impacts deep

Pterantula (Terry Goss) / Wikimedia Commons / CC BY-SA 3.0





# 2024 CHAMPIONSHIP



sea ecosystems like mini whale falls! Great White Shark rips off a 'gator leg to go, and continues swimming the sea, Giant Squid having well fled the FIELD OF BATTLE minutes before!

GREAT WHITE SHARK OUTLASTS GIANT SQUID! Narration by Profs. Katie Hinde, Jessica Light, Fernando Villanea, & Chloe Josefson.

**Commander Libby** @libbydoodle · 21m  
Replying to @Mammals\_Suck  
YOU GUYS! (And gals, and others, etc) This was my first year playing along and it was a BLAST! Thank you to everyone involved in #MMM2024 #2024MMM

**Amy McEuen, PhD** @mceuen\_amy · 10m  
What am i going to do now? Watch basketball? #2024MMM

**Dan Chibnall** @bookowl · 6m  
Great White Shark winning March Mammal Madness has strong Ron Swanson Woman of the Year vibes #2024MMM

**Katie MacKinnon, Ph.D.** @kcapuchin · 34s  
THANK YOU KATIE AND THE ENTIRE #2024MMM TEAM!! Amazing as always!! 🌟🌟🌟

**Prof. Katie Hinde** @Mammals\_Suck · 21m  
THANK YOU TO ALL WHO PLAY #2024MMM!!  
Have a wonderful year, take care of you, take care of your loved ones, and take care of nature!

**Kay, Usually** @KJayCee · 5m  
Thank you to the mods, the artists, the stoatisticians, the behind-the-scenes people pulling all the resources together, the teachers, the students, the fans, and everyone else I've forgotten to list for another Really Fun Learning Time™. #2024MMM

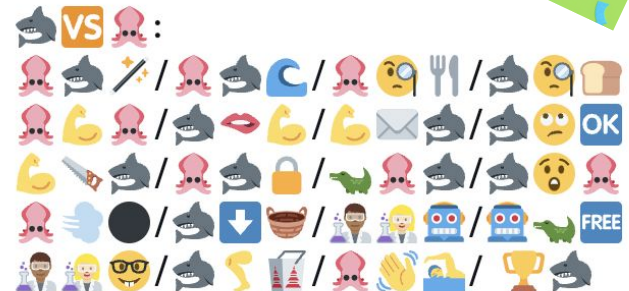
**A Real Squirrel** @arielsquirrel · 18m  
Thank you all for another year of laughter and science. I really really love this and can't wait for next year's madness. #2024MMM



**Jessica Popescu** @JessPopescu



#2024MMM  
CHAMPIONSHIP  
EMOJI BATTLE



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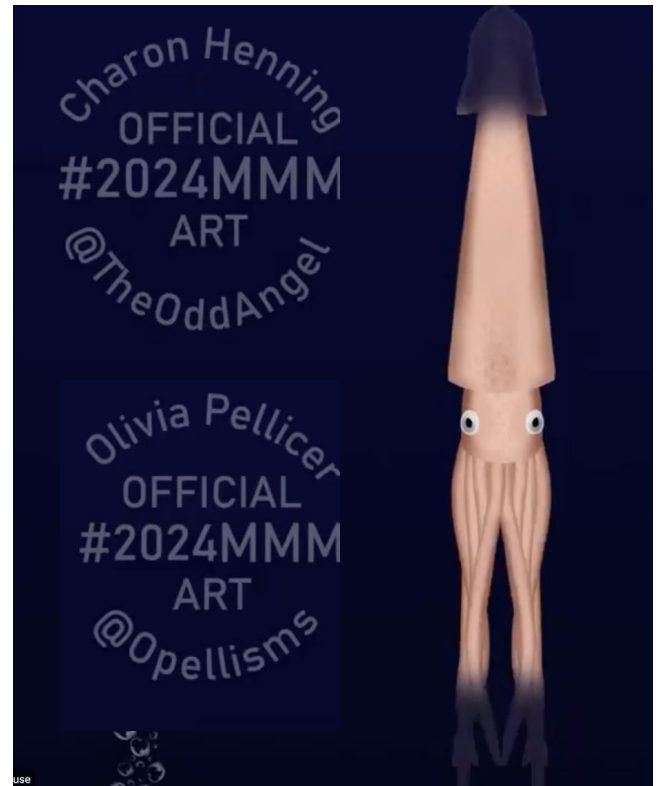
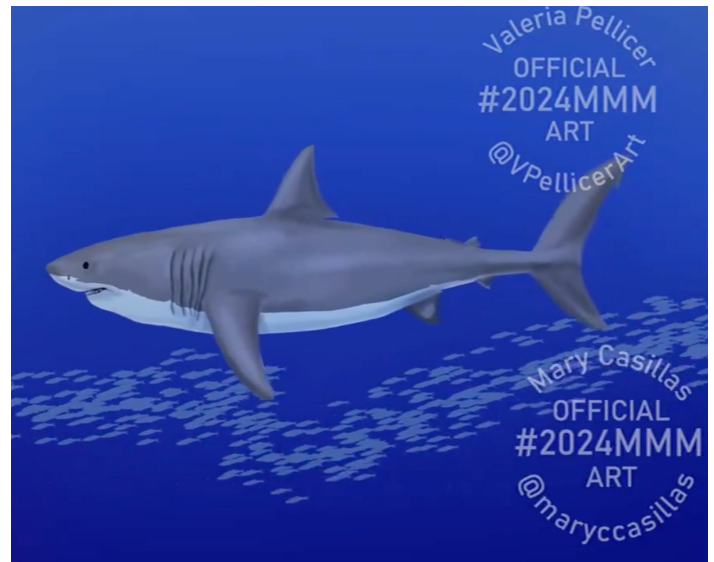
Roper, CFE & EK Shea. 2013. Unanswered questions about the giant squid *Architeuthis* (Architeuthidae) illustrate our incomplete knowledge of coleoid cephalopods. *Am Malacological Bulletin* 31.1: 109-122.

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# COMBATANT ARTWORK



2024 marks TEN tournaments of combatant art by the incredible Illustration Team! Each year Valeria, Olivia, Mary, & Charon awe & astonish us. If you have appreciated the MMM illustrators combatant artwork at any time in the last 10 tournaments, [please thank them with a tax-deductible donation at their newly launched 501\(c\)\(3\)!](#)

Valeria Pellicer  
@VPellicerArt  
[Website](#)

Olivia Pellicer  
@Opellisms  
[Website](#)

Mary Casillas Freisner  
@MaryCCasillas  
[Website](#)

Charon Henning  
@TheOddAngel  
[Website](#)



**Thank you for supporting  
Erminea Inc.**

**READ ALL ABOUT IT** by Katie Hinde, Margaret Janz, Melanie Beasley, Anali Perry, Anthony Costantini, & William Yates

THREE CHEERS FOR  
CHEER STOAT!!



# FINAL BRACKET

## OFFICIAL RESULTS



ALL TOURNAMENT INFO:  
[libguides.asu.edu/MarchMammalMadness](http://libguides.asu.edu/MarchMammalMadness)  
 NOTE: MMM includes many non-mammal species

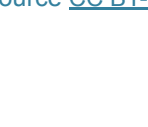
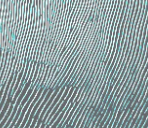
EPIC ANIMALS



RAINBOW COLLECTION



English Bracket v1.0



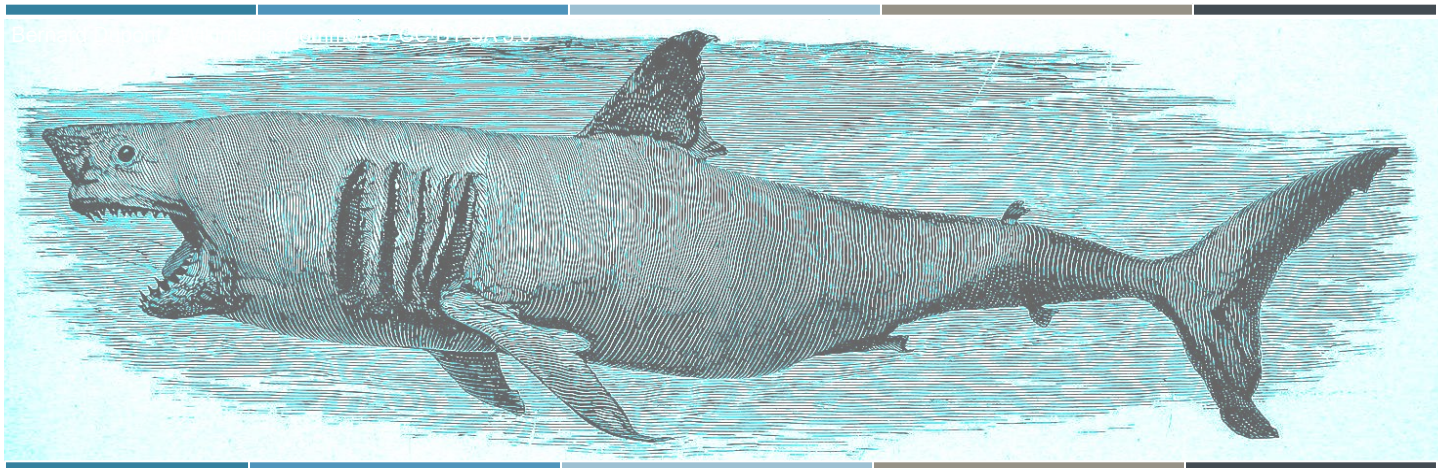
- WILD CARD WINNER 1 POINT
- ROUND 1 WINNERS 1 POINT
- ROUND 2 WINNERS 2 POINTS "Sweet 16"
- ROUND 3 WINNERS 3 POINTS "Elite Trait"
- ROUND 4 WINNERS 5 POINTS "Final Roar"
- ROUND 5 WINNERS 8 POINTS
- CHAMPION 13 POINTS
- WILD CARD 1 Point / 1
- ROUND 1 1 Point each / 32
- ROUND 2 2 Points Each / 32
- ROUND 3 3 Points Each / 24
- ROUND 4 5 Points Each / 20
- ROUND 5 8 Points Each / 16
- CHAMPION 13 Points / 13
- Learning Total / 138 max

MMM created and directed by Professor Katie Hinde, Arizona State University

Layout by Asst. Prof. William Nickley, The Ohio State University  
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 Typeset in LostLana Niu Pro. Designed by Bruno Jara & Luciano Vergara. From Latinotype Foundry.

CONNOISSEUR CRITTERS

TAKE A BOW



# REACH & IMPACT



# CHALLENGES & OPPORTUNITIES

- Many people are unfamiliar with the diversity of species in the tree of life, their evolutionary relationships, and dynamic interactions within ecosystems.
- Most scientific knowledge is unavailable to the general public; even open access papers are hidden behind a “paywall of jargon.”
- Socioeconomic disparities widen education gaps as some school districts have limited resources for science education.
- Underfunded schools have fewer opportunities for student experiences in nature, exposure to animals, or engagement with scientists.
- Educators are overburdened and burning out, with an increasing percentage of educators leaving the profession annually.
- **There is a dearth of scalable, open educational STEAM materials from academic scientists for educators to adopt that engage learners & educators across educational settings.**



# HOW HUMANS LEARN

- **HUMANS ARE SOCIAL LEARNERS**  
We most readily learn from people who are perceived as knowledgeable, successful, have shared identities, and to whom we have access.
- **NATURE IS GRIPPING TO HUMAN MINDS**  
We have cognitive biases to learn about animals and nature, especially children and particularly about dangerous animals and toxic plants.
- **HUMANS ARE STORYTELLERS & ‘STORYLISTENERS’**  
Our bodies and minds are adapted for language, culture, cooperation, & our control of fire allowed human social groups extended hours of fireside socializing and storytelling. *“Stories, proverbs, and anecdotes are cultural tools used in Indigenous communities to teach children about their environment.”* -Harriet Mutonyi
- **STORIES IMPROVE LEARNING**  
Through narratives, learners are transported across time and space, experience emotions, and make inferences. Information in story-form is easier and faster to understand, remembered better, and inconsistencies are more easily detected. Narrative-centered learning promotes learner interest, perception of control, and self-efficacy.
- **STORIES ARE OFTEN ABOUT ANIMALS**  
Animals feature prominently in many oral traditions, stories, fables, and folklore. Traditional stories often include information for avoiding predators, successful hunting, safe navigation, and social behaviors for cooperation. Analysis of hundreds of fairy tales identified four fairy tales in the last common ancestor of Proto-Indo-European languages, 5000 years ago. All four were about animals or creatures.
- **ART, GAMES, & EXCITEMENT IMPROVE LEARNING**  
Long-term retention of science is enhanced by arts-integrated instruction. Learning embedded in games or other approaches that generate excitement also improve learning outcomes.
- **UNIVERSITIES & LIBRARIES INSTRUMENTAL AGAINST MISINFORMATION**  
Researchers, Professors, and Librarians are at the forefront, teaching information literacy skills, curating information portals for more reliable search results, and navigating the knowledge landscape.

Learning Bias  
Content Bias  
Delivery Bias  
Source Bias  
Community  
Emotional Valence



Social  
Animals, Nature, Art  
Narrative, Illustration  
Trusted Experts  
Collective Experience  
Excitement

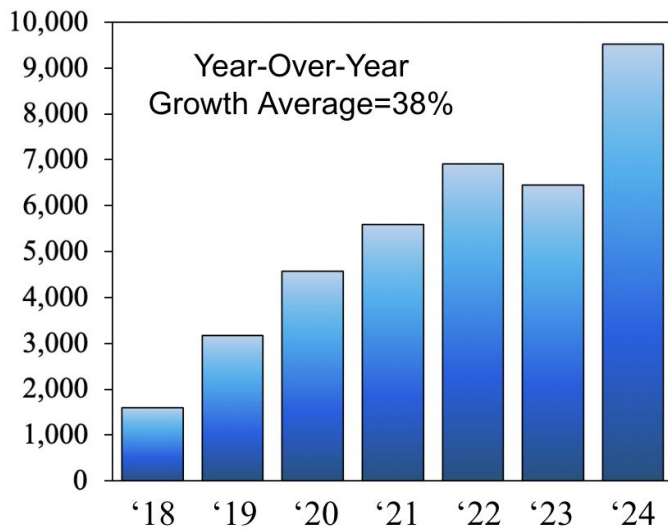
AN EXCITING  
TOURNAMENT OF ANIMALS,  
PRESENTED IN STORY  
BY EXPERT SCIENTISTS,  
WITH ILLUSTRATION,  
EXPERIENCED SOCIALLY,  
IS BANGARANG  
FOR LEARNING!

Reviewed in Invited flagship debut article in new eLife Series on Education and Outreach:  
Hinde et al. 2021. [March Mammal Madness and the power of narrative in science outreach](#). *eLife*. 10: e65066.

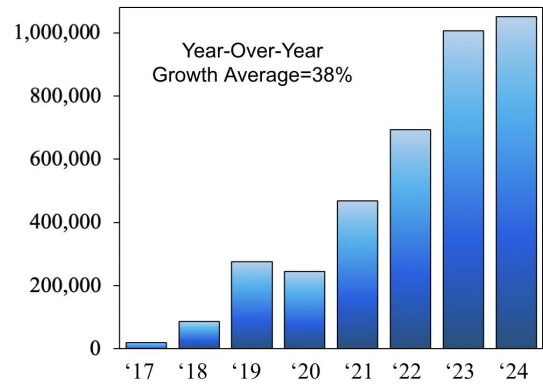
# Tournament Reach

**2024 MARCH MAMMAL MADNESS BIGGER THAN EVER!** As of tournament Launch, March 8, 2024, N=9,500+ educators requested tournament materials and reported plans to share the MMM bracket with 870,000+ learners.

Educators (N) requesting MMMaterials by Tournament Year



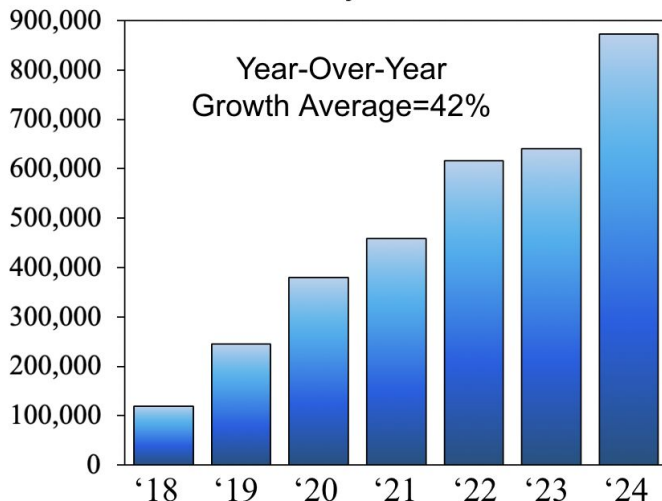
Web Traffic to the MMM LibGuide  
libguides.asu.edu/MarchMammalMadness



From mid-February to mid-March, 2024, March Mammal Madness was the **#4 most visited resource at Arizona State University.**

MMM-related searches were **2 of the Top Ten searches driving traffic to asu.edu.** The others were related to ASU class search, my.asu, asu canvas, asu login, and 'arizona state university.'

MMM Distribution to Learners (N) by Year

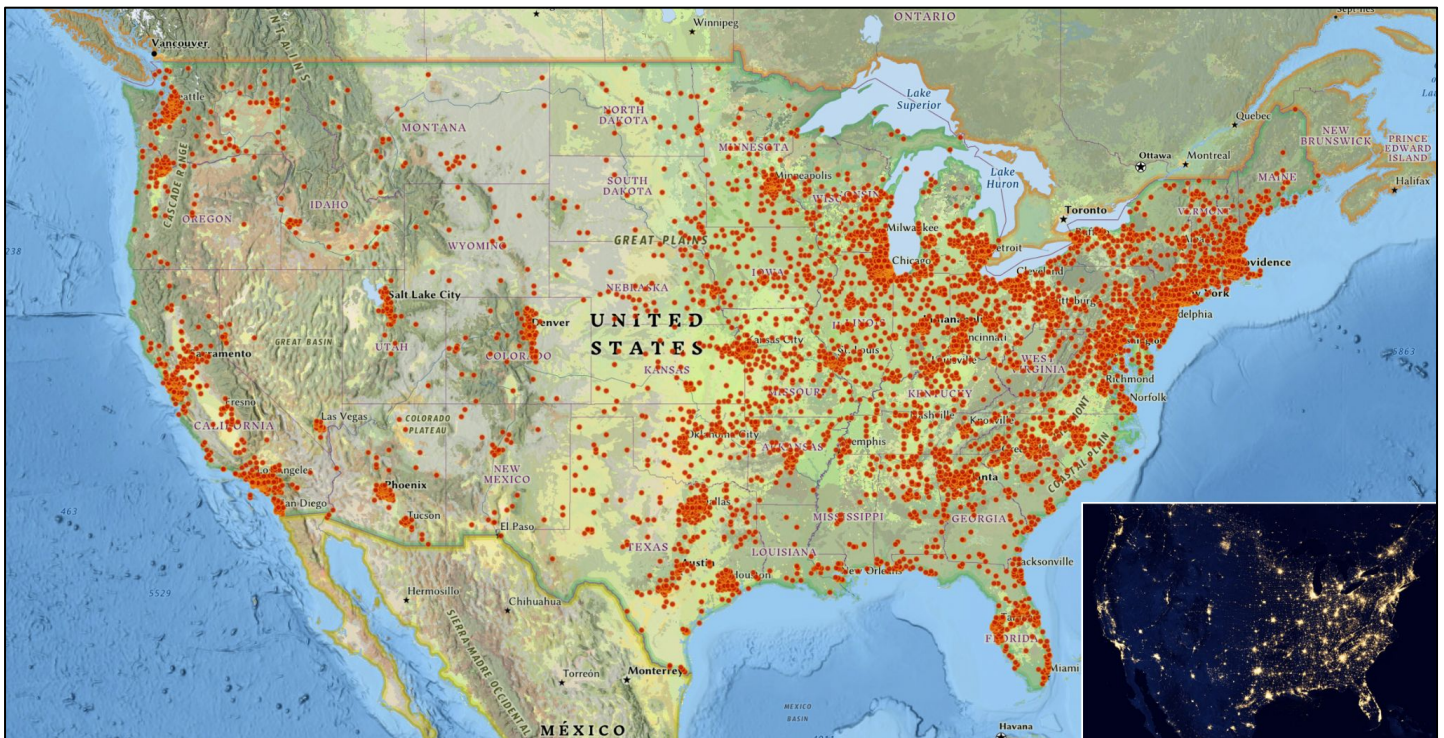


# Tournament Reach

2024 MMMaterials were requested by educators throughout the USA:

Requests from  
all 50 states!  
4000+ cities & towns!

- Over half of all counties in the USA have at least one educator that requested materials to use with learners.
- MMMaterials requests are similar to the distribution of the US population.

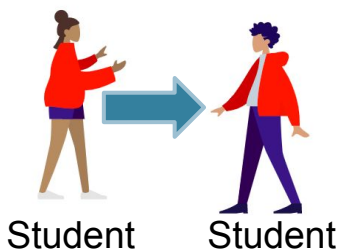
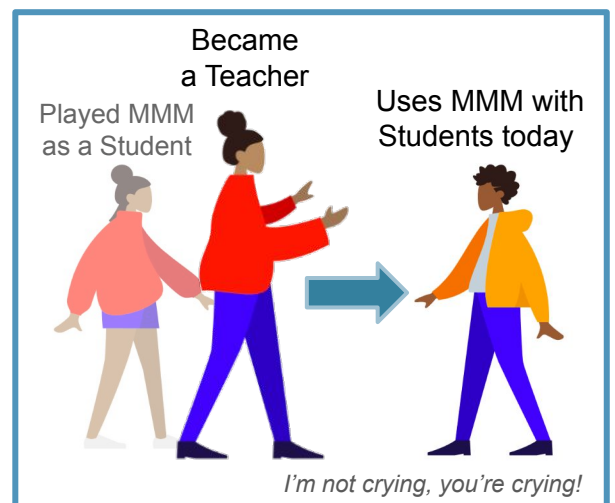
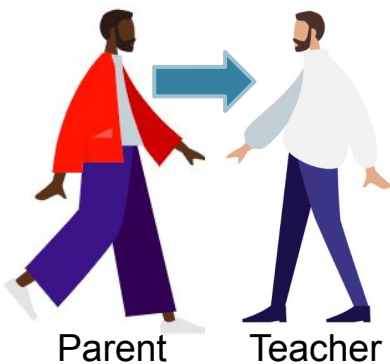
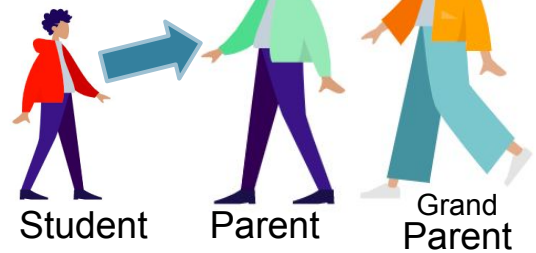
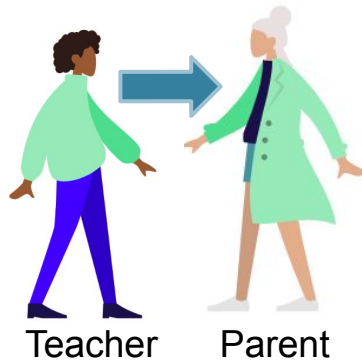
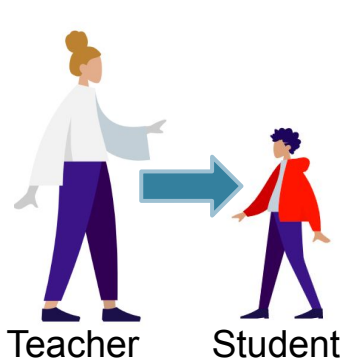
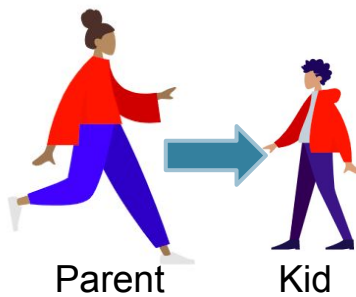
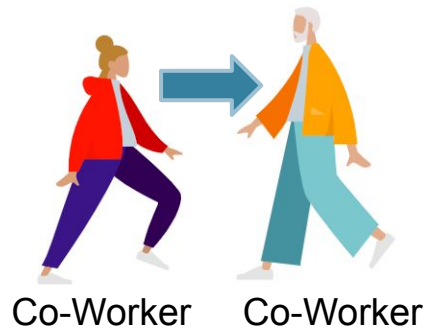
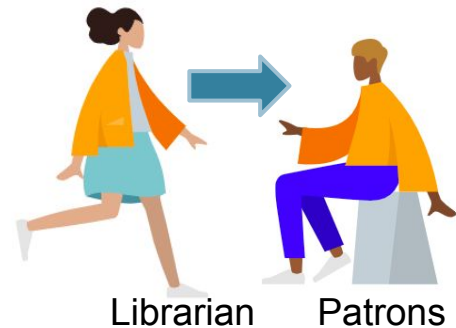
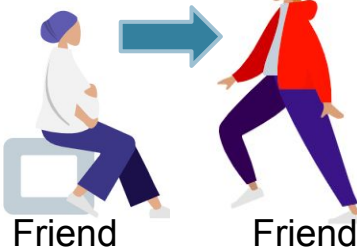
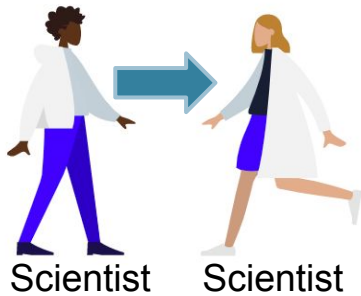
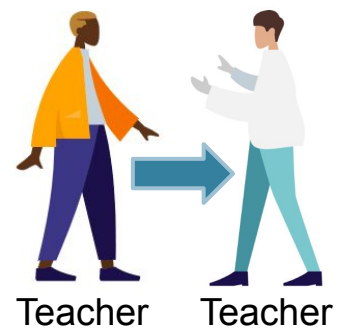


**USA Geographic Distribution of Educators Requesting MMMaterials.** Latitude and longitude locations, centered by postal zip code with inset image City Lights of the United States by NASA for population context. Educator survey conducted according to protocol STUDY00007542 approved by ASU IRB. Thank you to all survey participants! (Map Image by K. Hinde, special thanks to Matt Toro for arcGIS guidance.)

# SOCIAL TRANSMMISSION

Players have reported many, many different social network connections for learning about and playing MMM.

public domain mix-&-match illustrations by Pablo Stanley at Humaaans.com



# FORMAL LEARNING SETTINGS

## Conventional

4-Year College  
Community College  
High School  
Middle School  
Elementary School

## Special Populations

Alternative Schools  
Clinically-Intensive Residential  
Elementary Institute  
Home School Co-Op  
International Schools  
Charter Schools  
Private Religious Schools  
Juvenile Correctional Facility  
Adult Special Education  
Services  
Adult Correctional Facility

**March Mammal Madness is adopted widely in formal & informal learning settings.** Pools are routinely initiated among coworkers, friends, family, and other social groups of all ages to generate extensive *COMMUNITAS*. Players have self-described the following contexts for playing MMM via IRB-approved survey or public social media:

## INFORMAL LEARNING SETTINGS

### Adult-Oriented

BioTech Company  
Renewable Energy Company  
Career Tech Center  
College Dorm  
Conservation Non-Profit  
International Wildlife Rehabilitation Council  
National Primate Research Center  
California Department of Fish & Wildlife Staff  
Aquarium Staff  
Zoo Staff  
State Science Council  
Science Teachers Club at Teaching College  
ASU Mary Lou Fulton Teachers College Staff

### Youth-Oriented

4-H Youth Programs  
Afterschool Program  
Boys and Girls Club  
Children's Library  
Girl Scouts  
Science Club

### General Public

Community Center  
Museum  
Nature Center  
Public Library  
State Park  
Library Stem Lab  
Zoo

*“Many more communities and potential communities exist, ready and waiting to interact. Take just the extraordinary example of March Mammal Madness (Hinde et al., 2021) which draws a large and diverse audience into mammalian biology through a broad range of media but particularly a simulated tournament. ‘Outreach’ is entirely the wrong word for a project like this, which has to be much more all-encompassing than simple extension.” -Thrift, N. (2022). So what is a research university?. In The Pursuit of Possibility (pp. 213-240). Policy Press.*



Word Cloud of the most common courses for Educator use of MMM. Word size corresponds to the frequency of course:

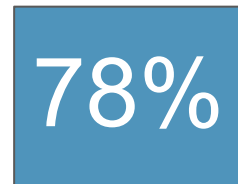


One group of educators has been particularly enthusiastic about the knowledge and skills their learners acquire through March Mammal Madness- Special Ed Teachers (N=213).

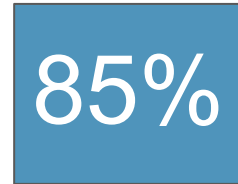
*“As a part of a self-contained class for high school students with moderate cognitive disabilities. Besides being generally informative and entertaining, it allows my students to develop functional skills such as critical thinking, making choices, organizing systems and forecasting events.” -Educator Survey Respondent*



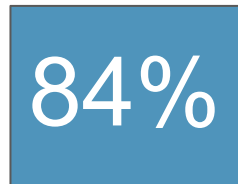
**In 2024, after the tournament we surveyed our experienced MMM Educators in the USA and received over 1000 responses (33% response rate):**



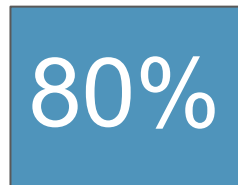
use MMM embedded in their curricula



report that MMM builds curiosity for the natural world in their learners

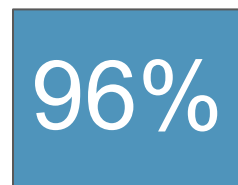


report that MMM increases learner knowledge of species within habitats



report that MMM improves skills for conducting research in their learners

*“MMM gives students a reason to connect information and create their own thoughts. they are not just researching they are researching with purpose. They naturally want to persuade others to their thinking. It is just set up so students are truly applying skills naturally that would take all year to teach in isolation.” -Educator Survey Respondent*



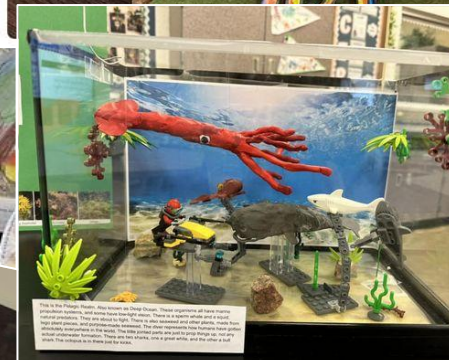
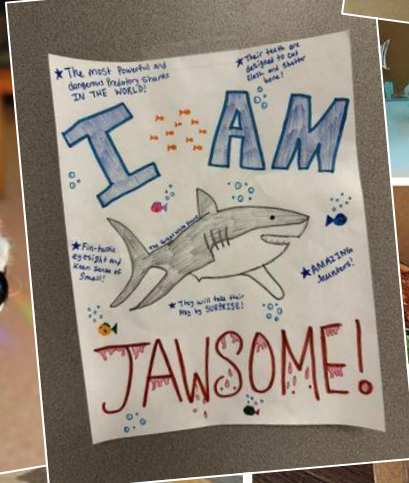
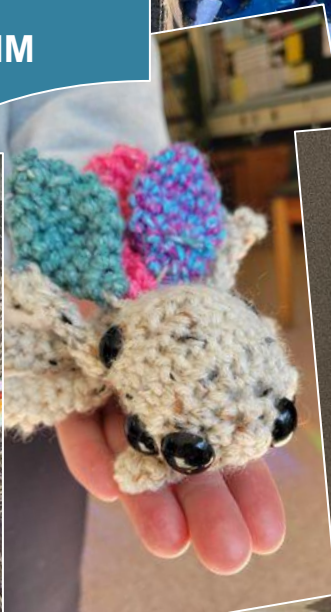
**of Educator Respondents report that they themselves learned something new by participating in MMM with their learners!**

In 2024, educators submitted 2000+ art pieces from their learners and classrooms!

- Posters
- Pennants
- T-Shirts
- Collages
- Trophies
- Sculptures
- Dioramas
- Wall Brackets

In the following pages, we have curated a showcase from MMM community members of all ages, but this represents only a fraction of the submissions.

Thank you for making MMM even more vibrant!



# LET'S GO! THE WONDEROUS

## WANDERING ALBATROSS

Species: Diomedea  
 Distribution: Wandering Albatrosses are mostly found in the Pacific Ocean.  
 Habitat: They live in the Southern Oceans.  
 Feeding: They feed on fish and squid.  
 Reproduction: They lay one egg at a time and incubate it for about 80 days.  
 Lifespan: They can live for up to 50 years.

# GREAT WHITE SHARK

Scientific Name: Carcharodon  
 Common Name: Great White Shark  
 Characteristics: Largest shark species, apex predator, can grow up to 30 feet long and 11,000 pounds.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on seals, fish, and marine mammals.  
 Reproduction: Gives birth to live young (pupae) after a 12-month gestation period.

# Mirounga angustirostris

## Elephant Seals

Characteristics: Largest seal species, can grow up to 30 feet long and 11,000 pounds.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.  
 Reproduction: Gives birth to live young (pupae) after a 12-month gestation period.

# Halloween CRAB

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# PITCHER PLANT

2024 MMM  
 They live for 50 years.  
 They are Carnivorous.  
 They eat insects, mostly flies and beetles.

# CRAB

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# PARK LIPINE NORTHERN CRESTED

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# #JUSTICE4HOGNOSE

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# k'rala

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# QUALITIES OF A WINNER

FAST HERBIVORE  
 EAST STRONG CORN

# COMMON NAME: Inaugle/Mongoose

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# WOLF

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# SPARKLEMUFFIN PERCOCK SPIDER

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# GREAT WHITE SHARK

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# CRAB

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# hi malayam moha

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Cobra Lily

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# liger

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# African Wild Dog

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Tiger

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# KORAL NAKE

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# HOWLING MENACE

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# CONAN FLAT LIZARD

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Porcupine

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# because im Toxic! the Toads

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Elephant

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# PELAGIC REALM

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Sharp

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Whirly-faced

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Whirly-faced

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Parrot

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Northern Elephant Seals

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Porcupine

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Merops leschenaultii

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.

# Whirly-faced

Characteristics: Feeds like a ghoul on Halloween. Only found in the Southern Oceans.  
 Habitat: Found in the Southern Oceans.  
 Diet: Feeds on fish, squid, and krill.



# BIGEYE HOOD SHARK

**LAGO OMANENSIS**

**FISH**

Division: Epic Animals

Seed: 40

**Habitat:** Deep waters of continental shelves, Western Indian Ocean

**Predators:** Sharks, Humans

**Defense Mechanisms:** Mimicry, Bite

**Why this competitor can win...**

It's a shark and it's a bone field. It'll use all of anything.

# THE TUFTED GROUND SQUIRREL TRIUMPH

**(Reithroscirus Macrura)**

**HABITAT**

The tufted ground squirrel has the greatest tail to body ratio among mammals. It has VERY short tail.

**DIET:**

It's a mix of omnivore. It eats a variety of fruits, mostly nuts, seeds, and other small animals.

**did you know...**

The tufted ground squirrel has the greatest tail to body ratio among mammals. It has VERY short tail.

# TIGER

**Canis Lupus Lupus**

**Kingdom:** Animalia

**Phylum:** Chordata

**Class:** Mammalia

**Order:** Carnivora

**Family:** Canidae

**Genus:** Canis

**Species:** Canis lupus

**Adaptations:**

Stripes for camouflage. Sharp teeth for hunting.

# Canis Lupus Lupus

**Kingdom:** Animalia

**Phylum:** Chordata

**Class:** Mammalia

**Order:** Carnivora

**Family:** Canidae

**Genus:** Canis

**Species:** Canis lupus

**Adaptations:**

Stripes for camouflage. Sharp teeth for hunting.

# Porcupine

**Hystrix Cristata**

**Kingdom:** Animalia

**Phylum:** Chordata

**Class:** Mammalia

**Order:** Rodentia

**Family:** Hystricidae

**Genus:** Hystrix

**Species:** Hystrix cristata

**Adaptations:**

Quills for defense. Herbivorous diet.

# GREAT WHITE SHARK

**General Size:** 15-20 feet long, 10,000 pounds

**Can weigh up to:** 22,000 pounds

**Age:** 30-40 years

**Adaptations:**

Sharp teeth for hunting. Camouflage.

# PAINTED WILD DOG

**Structural Adaptation:**

This dog's skeletal structure is built for speed. It's shaggy and short, perfect for heat.

**Habitat:**

These dogs live in grassy savannas and open woodlands and shrublands.

**5 Fun Facts:**

1. This dog was first discovered in 1820.
2. They are the only dog species that can run up to 40 mph.
3. They are the only dog species that can swim.
4. They are the only dog species that can dig.
5. They are the only dog species that can fly.

# Northern Elephant Seal

**Adaptations:**

Elephant seals are the largest seals in the world. They can weigh up to 5,000 pounds.

**Habitat:**

They live in the North Pacific Ocean and the North Atlantic Ocean.

**Diet:**

They eat fish, squid, and other marine animals.

# Adaptations

**Forest, Scrub Forest, Swamp, Urban areas**

I give it the name, trash rat, but it's not a rat.

# Chestnut-Headed Bee-Eater

**Trophic level:** Secondary consumer

**Adaptation:** An adaptation that this animal has is its long curved beak which is perfect for catching prey in a tight spot.

**Biome:** These birds primarily live near water in sub-tropical open woodlands in the Indian subcontinent.

**GO Bee Eater!**

# Mandarinfish

**SIATIS:**

3 Biomes in Length

63 The Mandrill more for safety

# The Painted Wild Dog

**Adaptations:**

They have stripes and spots that help them camouflage.

**Speed:**

A painted wild dog can speed to 44 miles an hour.

# Great White Shark

**Stats:**

Length: 20-30 feet

Weight: 10,000-20,000 pounds

**Adaptations:**

Sharp teeth for hunting. Camouflage.

# Brutus The Bulky Elephant!!!

**Biome:** Savannah, Central and Western Africa

**Fighter Name:** Brutus the Bulky Elephant

**Trophic level:** Herbivore

**Facts:** It's stronger than a gorilla.

# Painted Wild Dog

**Adaptations:**

They have stripes and spots that help them camouflage.

**Speed:**

A painted wild dog can speed to 44 miles an hour.

# Are you as ancient as Lucy?

**She is as old as Time!**

654

# THE TIGER CLAWS AWAY THE VICTORY!

**Adaptations:**

The tiger will never lose a fight.

**Strength:** The tiger is as strong as a lion.

# Are you as cool as Sparklemuffin?

# Hairy Legged Bee

**Adaptations:**

They have long legs to help them fly.

# Painted Wild Dog

**Adaptations:**

They have stripes and spots that help them camouflage.

**Speed:**

A painted wild dog can speed to 44 miles an hour.

# Why this competitor can win...

It can win by biting the enemy and spreading a deadly virus.

# WOLF ANIS LUPUS LUPUS

**Victory Against the Tiger**

**Large Jaw and Long Legs to Capture the Mouse**

# KOB

**Life Cycle:**


Kob -> Rat -> Kob

**Adaptations:**

They have long legs to help them run.


# Giant Squid (Architeuthis dux)

Can grow up to 50 feet!



Then have a large...

# Sperm Whale



19 feet tall

Can grow up to 79 feet long

1000 lbs

1000 lbs

1000 lbs

# Tiger

Tropical or evergreen forests



Striped

Ability to quickly recognize patterns on a predator

Eric Animals!

# Crab



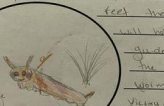
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10

10

# Velvet

They are velvet worms




Wood bug

# Northern Elephant Seal

they live in the North Pacific Ocean

they can hold their breath for up to 2 hours

eat sharks for breakfast!



they often fight during mating season

they are powerful swimmers

fully grown males can be 13 feet and can weigh nearly 4,400 pounds

# ELEGANT DANCING



# Rainbow Salamander



# Madagascar Spiny Tailed Tenrec



WOLF'S MONKEY

They also have colorful patches on their bodies

# Domestic Dog



Domestic Dog

# TIGER

Latin Name: *Panthera tigris*

Classification: Mammal


Division: Eric Animals

Seed #3

Habitat: Temperate or Tropical evergreen forests, swamps, or grasslands.

Predators: -Holes -Elephants -Crocodiles -Bears

Defense Mechanisms: -Hides pay down and bites throat -Sharp teeth & claws -Agile -Camouflage



# Sperm Whale



# Who will win?

Wolf's Mona Monkey

The wolf's mona monkey can stuff its cheeks full of fruit. Their eyes and ears are watching for danger at all times. Their diet is fruit and have big cheeks to hold the fruit.

Weaknesses: - Sometimes don't get along with other groups - Prey to leopards

Flat Lizard


The Flat lizard's bright make them easy to spot predators. The reason for these bright colors is to attract mates. They eat insects and are an secondary consumer.

Strengths: - Can swim - Fast - Father back to find food

Weaknesses: - Bright colors (attract predators) - Very small - Prey of birds (birds common)


# Dog is More!

Domestic Dog



Domestic Dog

# Tiger



Why this competitor can win... They are strong and stealthy and have smart tactics on hunting. They are also great swimmers.

# Centurid Crunch



# Great White Shark




Scientific Name: *Carcharodon carcharias*

Lifespan: 30-90 years

Habitat: near shore coastal waters

Prescription: A short body that tapers at both ends. Relatively short snout. Large, powerful body. Grayish color. Fin Foot: Lymphoid. Scales: Vulnerable.

# The Harvest Mouse or The Fuzzy Furry Friend!



# GREAT SKUA

Latin Name: *Stercorarius skua*

Classification: Bird

Division: Carnivore

Seed #2

Habitat: Open ocean

Predators: -None

Defense Mechanisms: -Eat some things and spit out the rest

# ELEGANT DANCING FROG


THE FACTS

BATTLE TACTICS

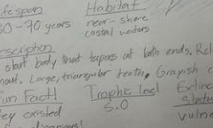
THE FACTS

THE FACTS


# Centurid Crunch




# Great White Shark



# The Harvest Mouse or The Fuzzy Furry Friend!



# GREAT SKUA



# Nicobar Pigeon

Latin Name: *Columba nicobarica*

Classification: Aves (birds)


Division: Rainbow Connection

Seed #9

Habitat: rainforests, dry forest, mangroves and shrublands of the Andaman and Nicobar Islands

Predators: -Humans -Cats

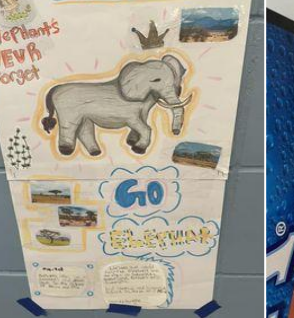
Defense Mechanisms: -Strong beak -Flight -Sharp nails



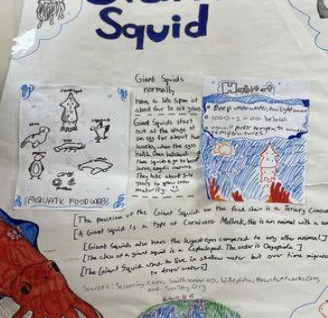
Why this competitor can win... This pigeon has excellent navigation skills. They have sharp nails to grip their feet and can make a quick escape!

\* Closely related to the dodo \*

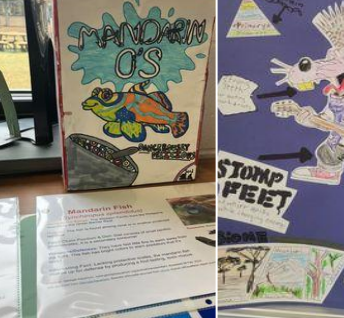
# Elephant



# Giant Squid



# MANDARIN OS



# Koala-T Contender

A Koala's stomach is a suit of armor, protecting him from the poisonous eucalyptus leaves.

As dry as a sock, the Koala really takes a drink. Koala really takes a drink. Koala really takes a drink. Koala really takes a drink. Koala really takes a drink.


Who needs a purse when you have a pouch? Instead of a handbag, Koala carries her babies!

Zzz... Sigh! Koalas can sleep between 18-20 hours a day!

These cuddly critters can climb and crawl is crush some leaves!

# The Halloween Crab

Classification: -Location: -Habitat: -Diet: -Reproduction: -Defense Mechanisms: -Structural Adaptations: -Behavioral Adaptations:



# FACTS WILD DOG

LYCAON PICTUS

the wild dog is pack animal

extremely sharp skin - shearing in

its teeth is pronged

they have a bodies of strong legs

they have 4 toes foot

by are 40-74lb

re-use animal dens

they return to the same den

they stick together & share food

a pack is 10-40 wild dogs

wild dogs will keep each other get out of traps

pups are fed by their mothers regurgitation

the pack helps raise pups

they hunt during the day

they are very strategic hunters & they run alone


100% success rate while hunting

Aggressive by Nature

Kills for Fun

COME WATCH THE SHOWDOWN

# GREAT WILD SHARK



Parachanna carcharias

#1

WINNING







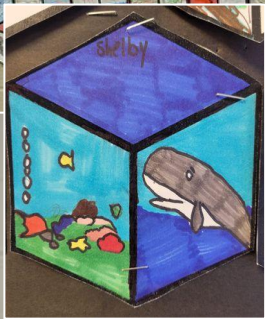
#1  
Walks up right  
FIRST HUMAN  
Resourceful  
**LUCY**  
Vegetarian  
Fast  
Smart

Grace  
TUSKS  
Smart  
**Elephant**  
Forest & Savannah  
Take A Bow  
They talk with different ranges of sound and they use their trunks to communicate



GIANT SQUID  
Snatch Prey up to 33ft  
Sharp Sucker  
Powerful Sucker  
8 eyes  
Cats Carthon  
**EPIC ANIMALS**  
"The Maken"

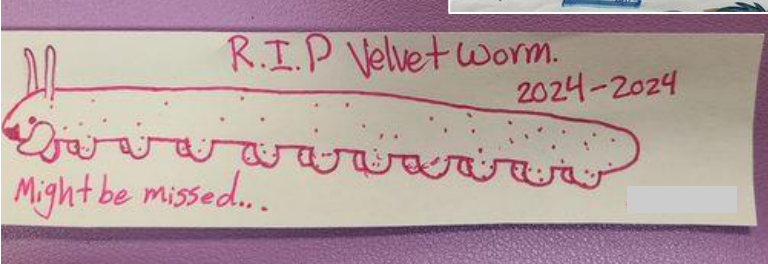
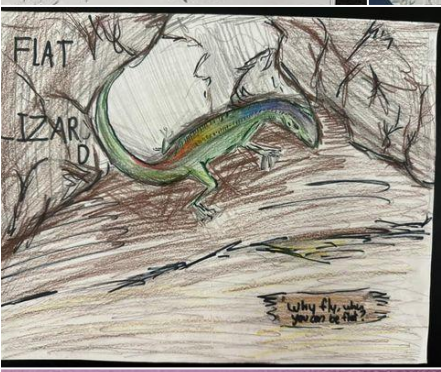
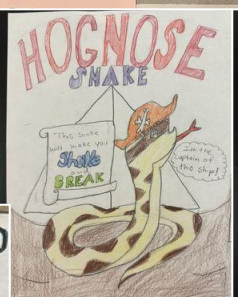
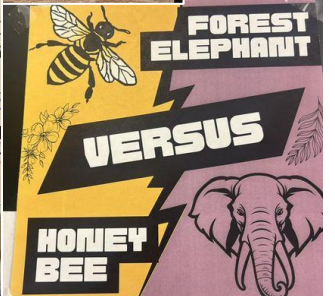
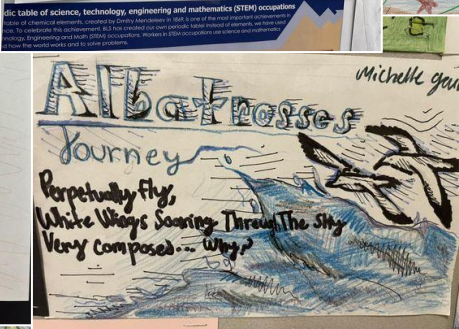
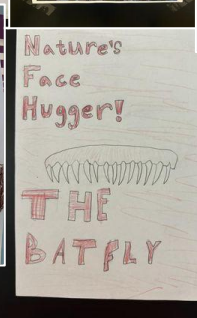
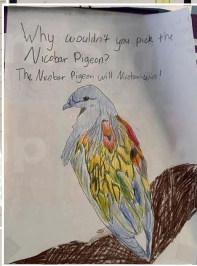
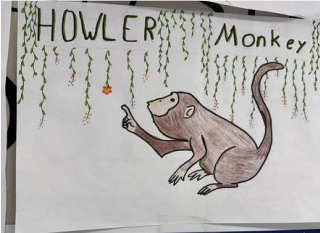
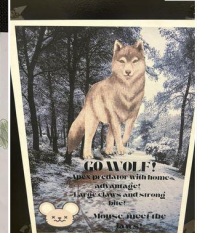
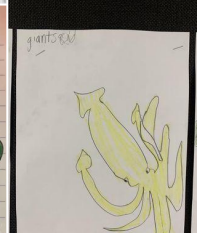
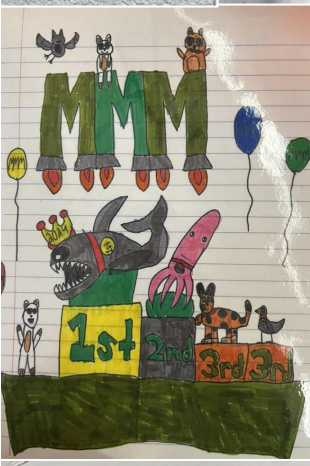
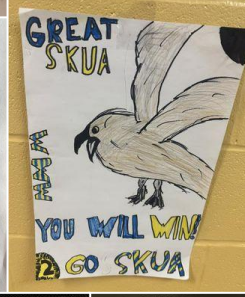
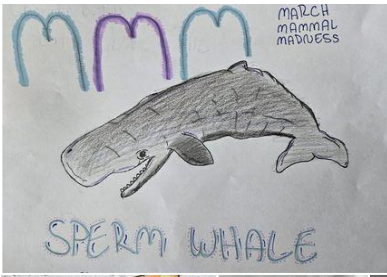
Stays in trees  
Sharp strong arms  
Climbs good  
is able to eat poisonous leaves  
Commissure  
Critters they eat toxic plants

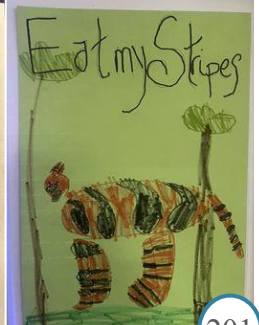
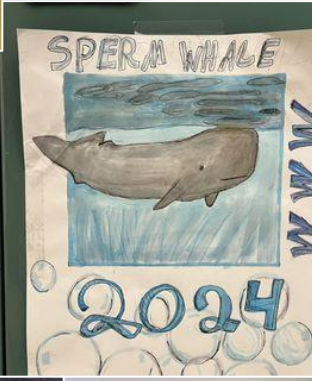
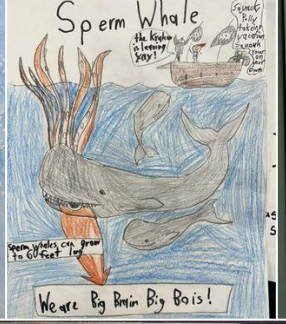
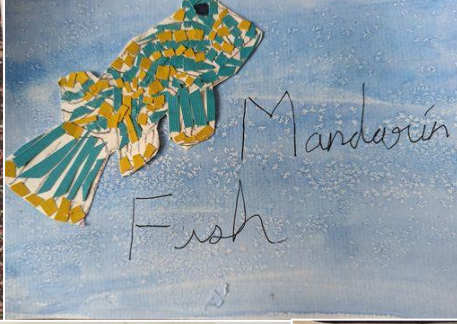
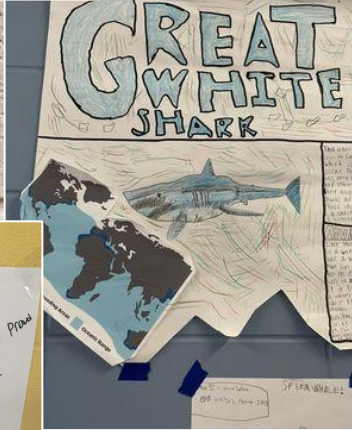
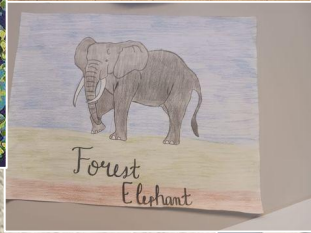
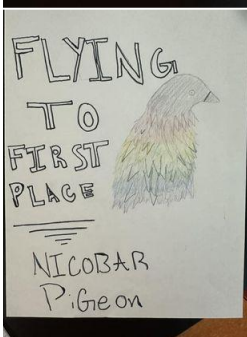
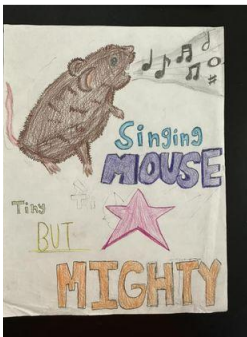


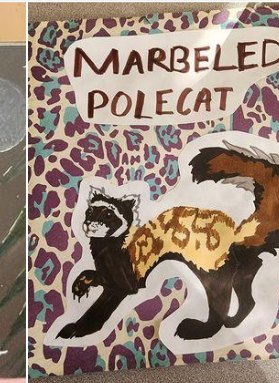
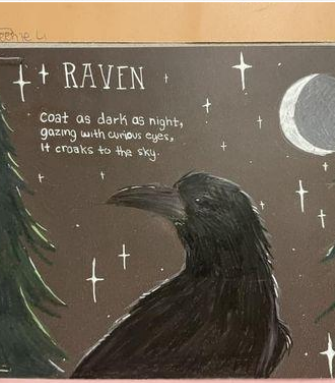
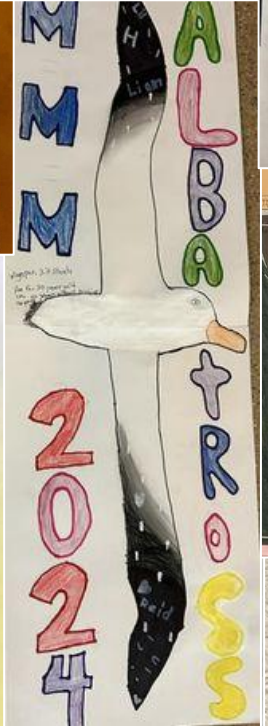
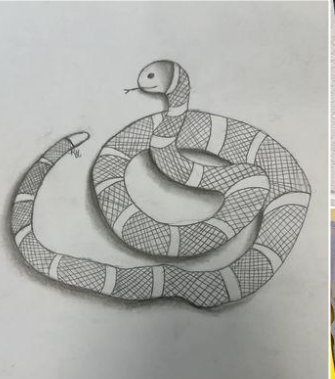
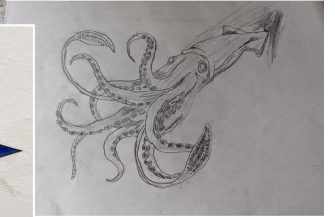
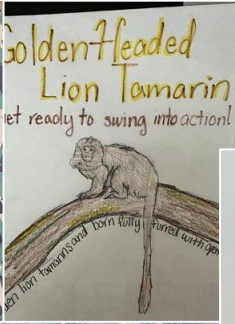
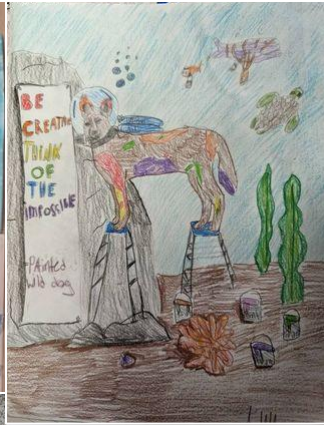
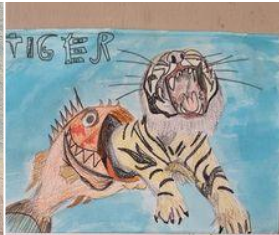
Excellent Swimmers  
**WOLF**  
Epic Animals  
Sperm whale  
Tiger

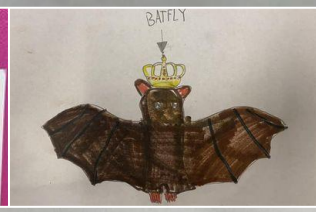
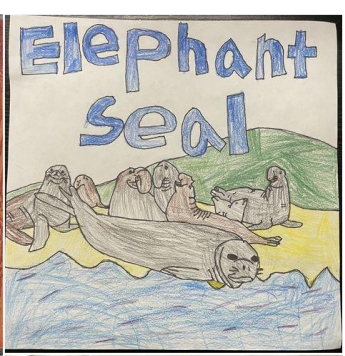
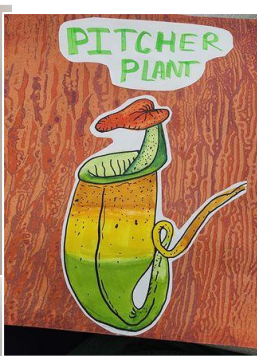
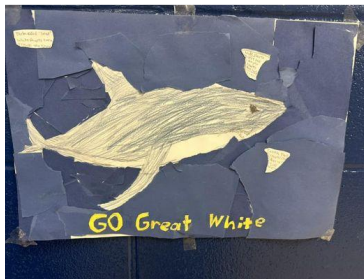




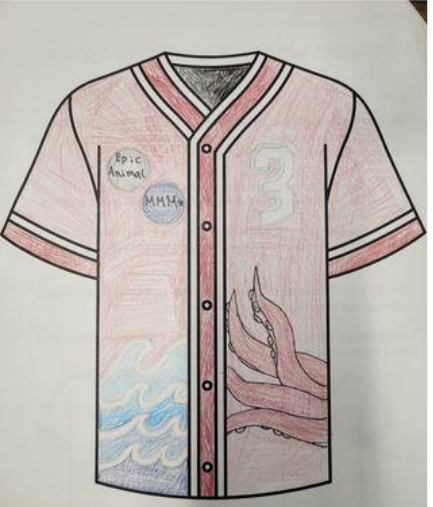












Has the most powerful Bite! 179,200 pounds!!

5ft long!!



Has the largest Brain on the Planet!


**THE MAMM CHAMP!!**

**Sperm Whale**


Bow to the Bird



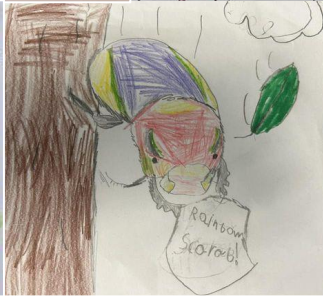
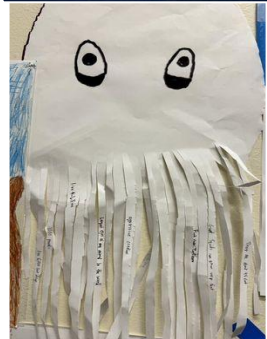
Peacock Mantis Shrimp



Madagascar SUNSET Meth



Fly through the blue sky Like the sunset before the Dark, deep, dusk night fall



i'm SPIKY and SPICY!

**Stag**

The Harvest Mouse

**MARCH MAMMAL MADNESS**

The Hamster

#1

#2

#3

**TUFTED GROUND SQUIRREL**

Caspian Tiger!

**Sperm Whale**

**MAMM CHAMP**




**WOLF**

**Death of a Honey Bee**

Willing to **DEPART**

To sting a **FOE**; revenge is A Honey Bee's **ART**.



Chestnut Head Bee Eater

**THE GIANT SCORPION**

**CARNIVORE**

**ARCHITEUTIS DUX**

**BIOME** - the world's OCEANS



**LET'S GO!**

Win the busted **BRACE**

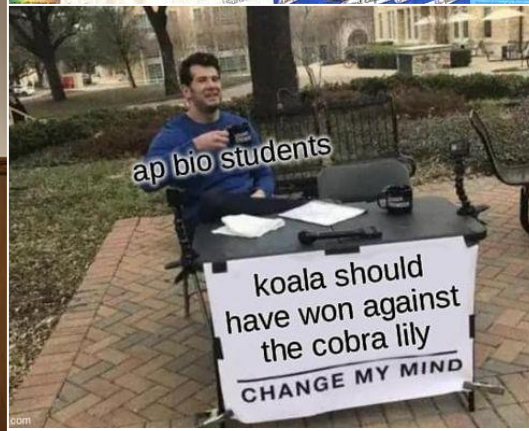
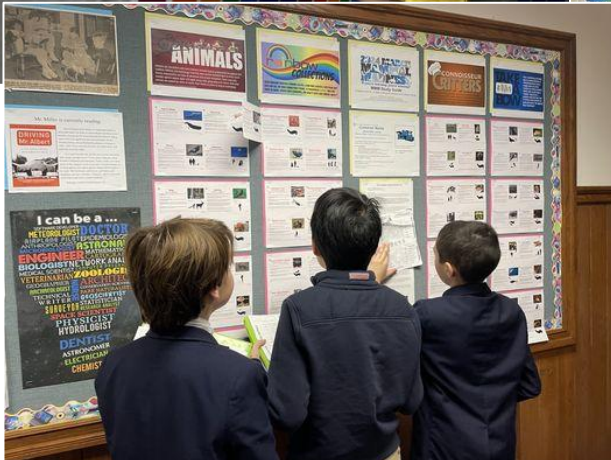
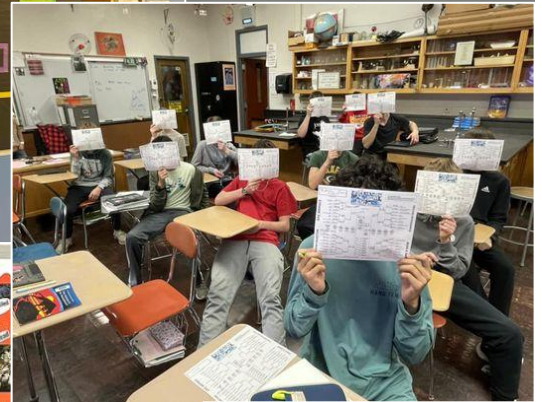
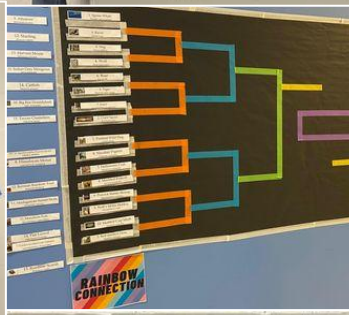
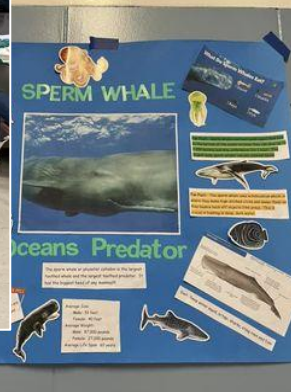


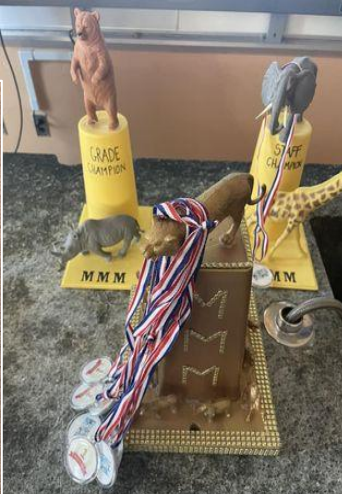


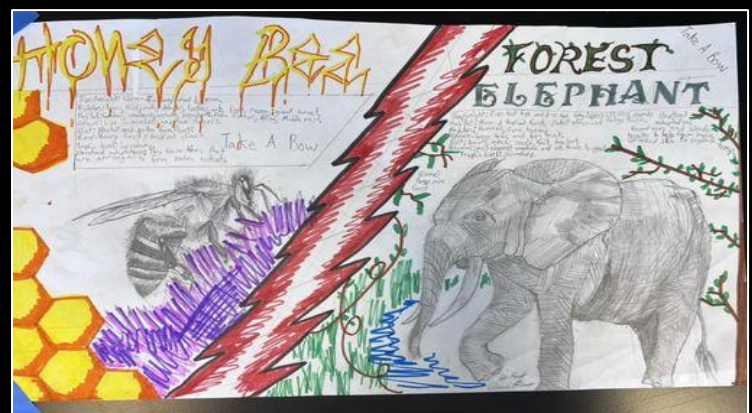
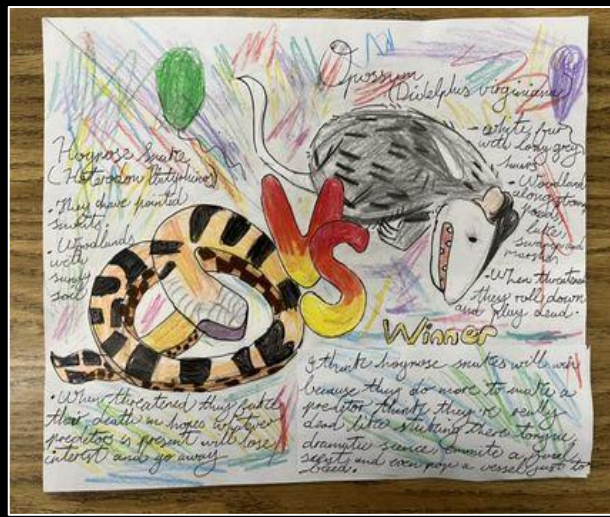
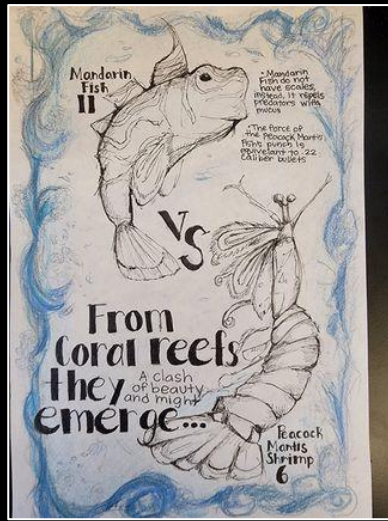


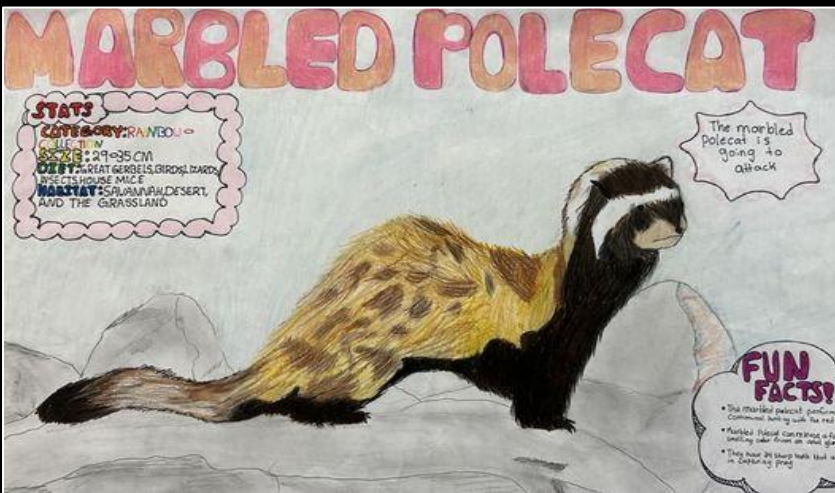
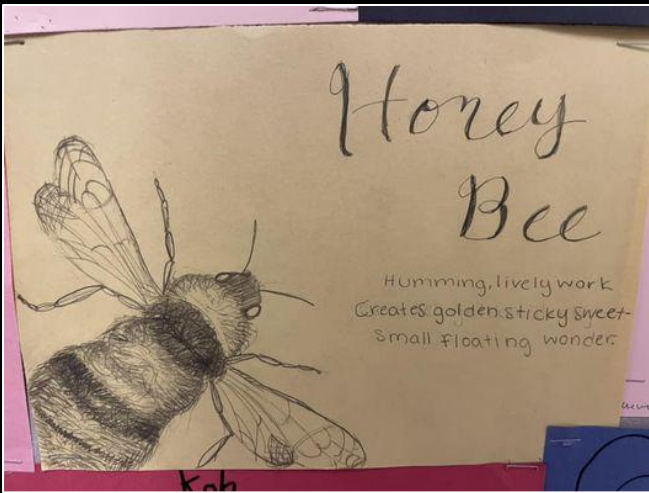
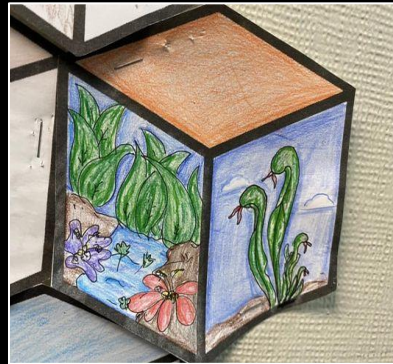
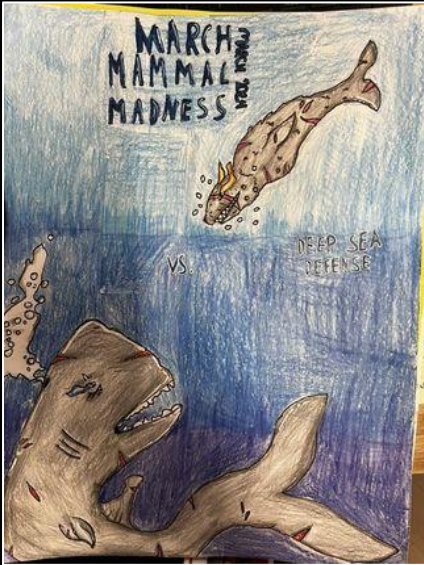












**FUN FACTS** Peacock Mantis Shrimp

1. It has a max size of 2-7 inches.

2. The mantis can punch with a speed of a .22 caliber bullet.

3. Some species can wield spear like limbs that can impale their targets.

**WINNER**

**VS**

Mandarin Fish

**LOOSER!**

I think that the peacock mantis shrimp will win because it is able to punch with a speed of a .22 caliber bullet. It can also impale some of its targets with its spear like limbs.

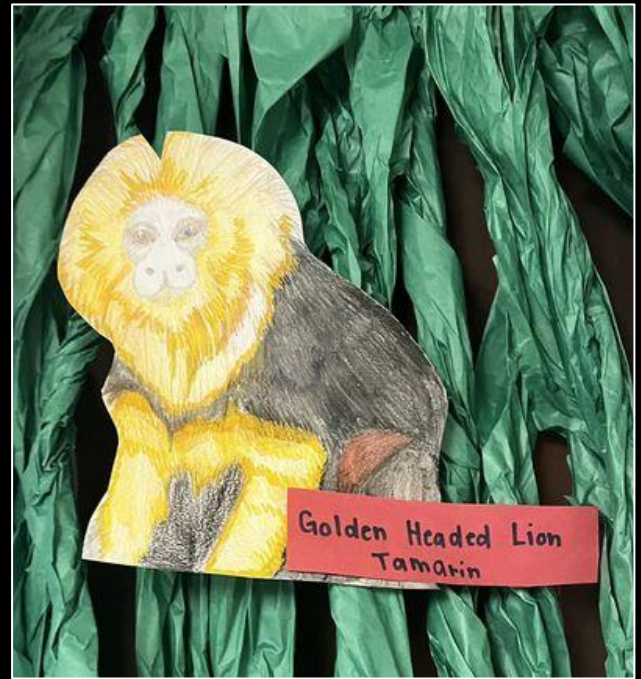
I don't think that the mantis fish would win because it doesn't have any fighting abilities. I might be able to swim away fast after loosing though.

**FUN FACTS**

These fish do not have scales instead they secrete mucus from their skin.

1. Its bright colors make predators think they are toxic.

2. They grow to about 3 inches.



**RAVEN**

Ravens will fight over a dead man's flesh and kill each other for his eyes.

Wolves fence me and fish me (Cats) make one's browsing one's lobby

**Fun Fact:**

- Ravens have excellent memory.
- They can remember faces and faces.

**Skills:**

- Intelligence
- Logic
- Stubborn
- Communication
- Strength
- Speed
- Alert

**Traits:**

- Wedge-shaped bills
- Shiny feathers
- Long sharp bills
- Black feathers

**Omnivorous**

Plants

Animals

Human waste

Food



**ITSY-BITSY**

I might be, but that won't stop me from being Unique!

**SPARKLE MUFFIN PEACOCK SPIDER**

**STATS:**

- Size: Four to six millimeters in length
- Diet: Flies, moths, grasshoppers, winged ants(able), and wasps.
- Habitat: Eastern Australia

**Fun Facts:**

- They are about as small as a grain of rice.
- The female may eat the male.
- And they also dance to attract a mate.

# TeAMMMWORK 2013-2024

March Mammal Madness is made possible, year after year, by the extensive volunteer efforts of dozens of scientists, librarians, educators, conservationists, and artists. The specific contributors, and their contributions, vary from year to year, but the expertise, creativity, talents, skills, and insights each has brought to the tournament have carried forward into the extravaganza of performance science that is March Mammal Madness.



**Katie Hinde PhD**  
Arizona State University  
MMM Founding Director

## LIBRARY TEAM



**Anali Perry, MLIS**  
Scholarly Comm Librarian  
Arizona State University  
Library Team Director

*Explore the World*



**Anthony Costantini**  
Open Scholarship Intern  
Arizona State University  
LibGuide & Image Sourcing



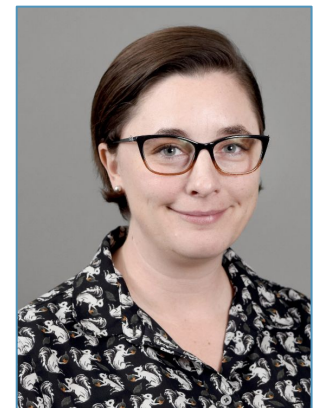
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**Valeria Pellicer, BFA**  
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**Jeanne Dietrick**  
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**Brain Easterling**  
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Combatant Info Slides  
& Sports Summaries



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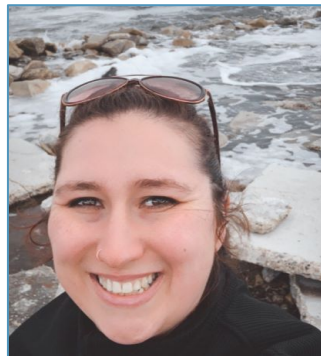
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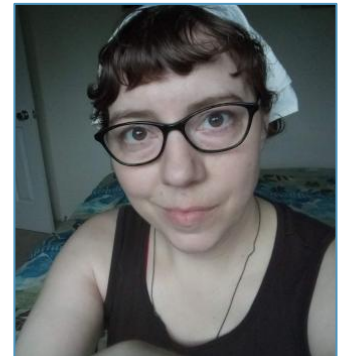
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**Margaret Janz, MA**  
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Sports Summaries

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**Connor Fox Ditelberg**  
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**Jessica Popescu**  
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MMMletsgo!



**Kate Lesciotto, PhD**  
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Sam Houston State University  
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**Melanie Beasley, PhD**  
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École St. Gerard  
MMM Trading Cards



**Mr. Jeff Brunstrum**  
Jacobs High School  
Online MMM Bracket



**Ms. Jennifer Gabrys**  
Detroit Country DS  
MMM Trailer



**Ms. Kaitlyn Faust**  
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MMM Presentation



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**Ms. Madeline Sinnott**  
Hudson Comm. School  
MMM Presentation

# GENETICS TEAM



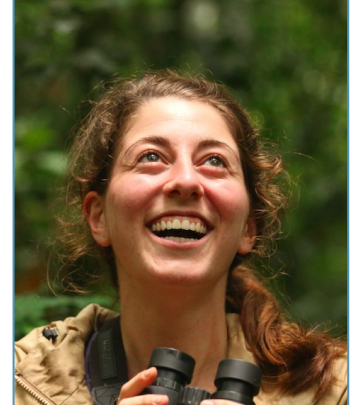
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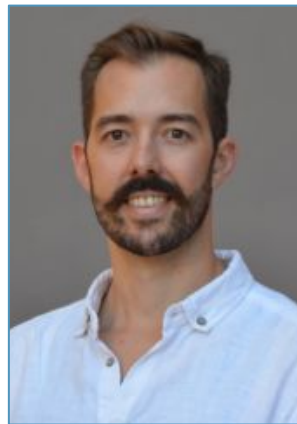
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**Patrice Connors PhD**  
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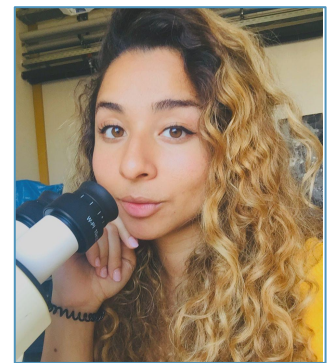
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**Danielle Lee PhD**  
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# Narration TEAM cont.



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**Jessica Light, PhD**  
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**Asia Murphy, PhD**  
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**Mallika Sarma, PhD**  
Human Biologist  
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Johns Hopkins Med



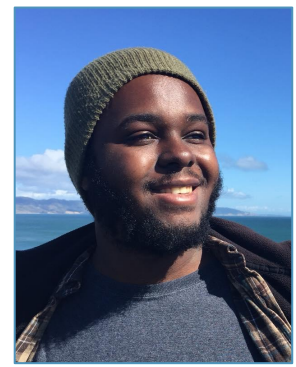
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**Jo Varner, PhD**  
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Dept of Biological Sci  
Colorado Mesa Univ

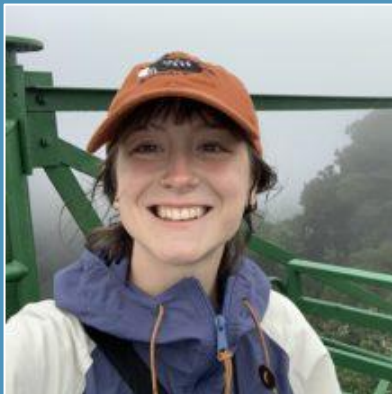


**Melissa Wilson, PhD**  
Evolutionary Biologist  
School of Life Sciences  
Arizona State University



**Kwasi Wrensford**  
Mammalogist  
Integrative Biology  
UC Berkeley

New Narrators in 2024!



**Gretchen Andreasen**  
Ecologist, Dept of Biology  
Univ Notre Dame



**Chloe Josefson, PhD**  
Biological Sciences  
University of Idaho



**Thank you  
Media!**



**SCIENTIFIC  
AMERICAN**

The Washington Post



**WSJ**



2024

'Who Would Win?': March Mammal Madness is underway. Here's everything players need to know. USA Today March 2024

2023

March Mammal Madness Wants To Hear You Roar NPR Science Friday March 2023

2022

Points are just a score, but in March Mammal Madness, if you're learning, you're winning The Current CBC March 2023

2021

'March Mammal Madness' Brings Simulated Animal Fights to Huge Audiences Scientific American February 2021

2020

Missing The NCAA Tourneys? Try March Mammal Madness WBUR March 2020

2019

This is the March Office Pool for Nerds Who Love Animals Washington Post March 2018

2018

"MMM is full of educationally fascinating twists and turns!" National Geographic Education March 2018

2017

"But what if faculty members could harness the excitement of March Madness and channel it into a learning device?" Chronicle of Higher Education March 2017

2016

"March Mammal Madness may be more thrill-packed than the NCAA's version of March Madness." NPR Goats & Soda March 2017

2015

Mammals face off in Twitter battles for supremacy. Nature News March 2016

2014

Have a Weasel in Your Bracket? Fans Go Mad for Mammals. March tournament puts animals in imaginary contests; Orca versus hyena. Wall Street Journal FRONT PAGE March 2016

2013

MMM has "become this incredible vehicle for teaching about science, natural history and conservation" NPR Morning Edition 2015

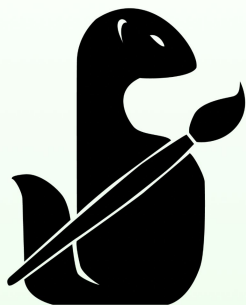
# SPECIAL THANKS

Beyond the teaMMM who create the tournament each year, March Mammal Madness is made possible through the direct contributions of numerous entities and organizations. We thank each and every one for their contributions to celebrating and protecting the natural world, scientific discovery, and public learning.



IMAGE LIBRARY

American Society of  
Mammalogists



Erminea  
Inc.



In 2024, Oxford University Press, in collaboration with March Mammal Madness, once again curated a special collection of articles of combatants freely available to the general public. The flagship journals of the American Society of Mammalogists, **Journal of Mammalogy** and **Mammalian Species** featured prominently in these MMM collections.



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# SPECIAL THANKS

Perennial appreciation to Animal Diversity Web by the University of Michigan Museum of Zoology, International Union for Conservation of Nature (IUCN), PhyloPic 2.0, and Wikipedia *and their communities* for the incredible resources made freely available to the learning public. Thank you for your indirect contributions to the success of March Mammal Madness.

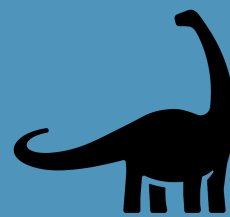
*Animal Diversity Web*



University of Michigan  
MUSEUM OF ZOOLOGY



**WIKIMEDIA**  
FOUNDATION



**CARNEGIE  
MUSEUM OF  
NATURAL  
HISTORY**

ONE OF THE FOUR CARNEGIE MUSEUMS  
OF PITTSBURGH



For 2024, awesome colleagues at museums, zoos, aquariums, and science centers went above and beyond with extra March Mammal Madness celebrations, detailed throughout this compendium. We thank them collectively again for collaborating in celebrating our tournament combatants and their ecosystems.

**Thank you** to the American Society of Mammalogists for the invitation to showcase how evolutionary social science can inform approaches to science communication and science engagement.

For those looking to philanthropically donate to mammalogy research & researchers, [explore the many ASM fellowships and awards.](#)

## 2024 American Society of Mammalogists

Annual Meeting • Closing Keynote • Boulder CO



Art: Michelle Bezanson, Santa Clara University

## The **SCIENCE** of Science Engagement

**Katie Hinde, PhD**

Associate Professor  
School of Human Evolution  
& Social Change  
Center for Evolution & Medicine  
Arizona State University  
[@Mammals\\_Suck](#)



## 2024 NABT EVOLUTION SYMPOSIUM

Friday, November 15, 2024 10:30am-12:30pm Platinum Ballroom 3/4



TALK:

## A LIONESS WALKS INTO AN ORCA

How Stories Enhance  
Science Education

Katie Hinde

Arizona State University

## NCSE TEACHER WORKSHOP

### Mystery Mammal Madness:

Curious Case of Convergence

*Blake Touchet & Jeff Grant* NCSE

Help students overcome common misconceptions about evolution through a convergent evolution storyline. We'll share effective classroom strategies and distribute NCSE-developed resources.



# NCSE

National Center for  
Science Education

# LOOKING FORWARD TO 2025

We are already intensely planning for 2025- get ready for expanded and improved guides for players, learners, and educators, some new lesson plans, and a more user-friendly LibGuide. And oh look, it will be 10 years since the Genetics teaMMM arrived on the March Mammal Madness scene. Speaking of scenery, we are moving to [bluer skies for 2025!](#)

