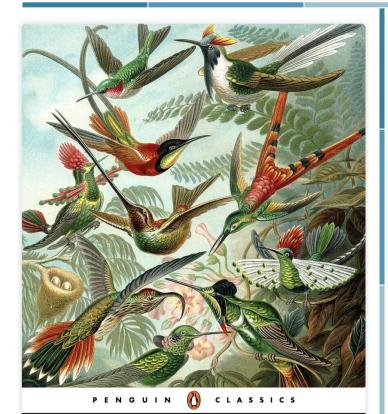
March 18, 2024

If you're learning, you're winning!

Since 2013



MARCH MAMMAL MADNESS

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

Tonight these rarely overlooked, brilliant beasties 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 thoughout the continent, mostly in the east and southern regions. African painted dogs live & hunt is large social groups. In fact the larger the group, the better they are at taking larger prey like wildebeest and kudu.



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 savannah the painted dog calls home: Ngorogororo Conservation Area, Tanzania, not too dissimilar a habitat for Sparklemuffin. The Spider arrives the battle space in Tanzania

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 or 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 Austrailian 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

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 DOUC LANGUR **CRUSHES** consumed! 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.



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!!!!

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.



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

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.



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 Chomolungma/Qomolangma (Nepal), (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



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.





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 interfluve 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 Fla Lizard...

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' 'bouthey now (hey now)- FICUS, FICUS ALL DAY!



Flat Lizard is a key seed disperser for the Namaqua Fig to geminate 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 "spearers". 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

mythical dragons: scales! Instead of scales, mandarin fish are covered by BOTH a thick layer of noxious, antimicrobila 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.



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.

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.



Madagascan Sunset Moth (*Chrysiridia 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



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

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

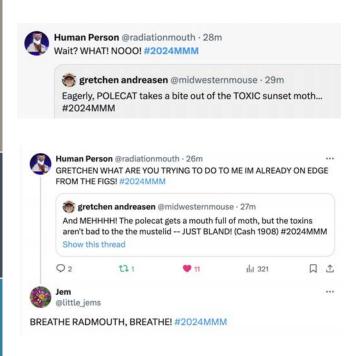


#2024MMM

RAINBOW COLLECTION EMOJI BATTLE:



7:04 PM · Mar 18, 2024 · 96 Views



CITATIONS

Red-Shanked Douc vs. Rainbow Scarab

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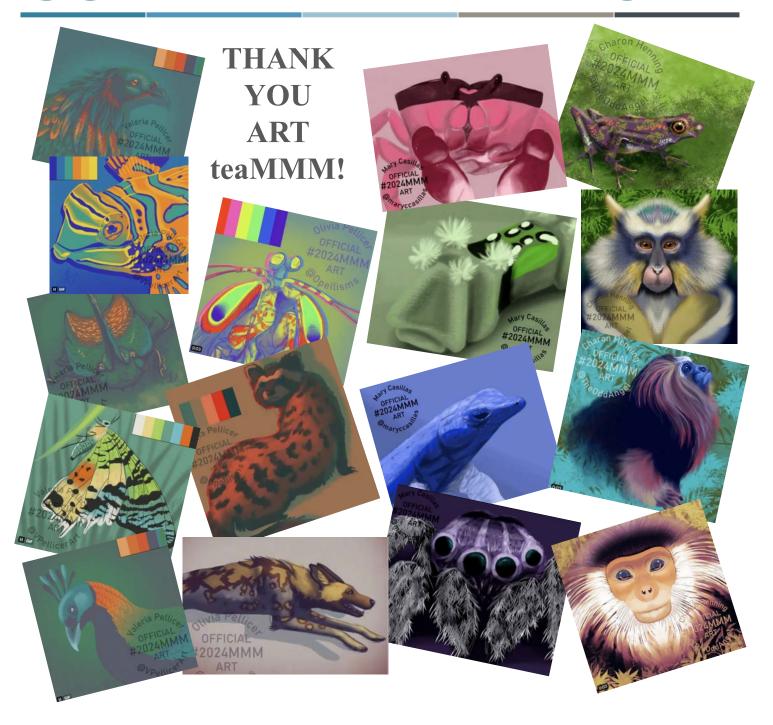
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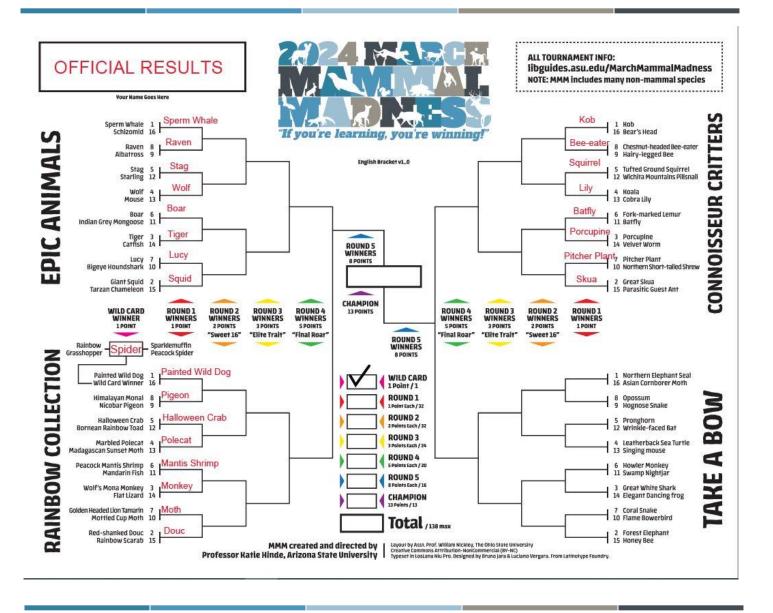
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And a big THANK YOU! to our friends over at the Denver Museum of Nature & Science for their *incredible* MMMusic Video!