



March 13, 2023

If you're learning, you're winning!

Since 2013

**MARCH MAMMAL MADNESS turns double digits y'all!** For a decade we have been engaging in very scholarly and academic consideration of animal encounters.

In coming weeks we will share in a journey across our world, & occasionally through time, in a celebration of animals, adaptations, ecosystems, and our community. The philosopher, and natural historian, Aristotle once affirmed "In all things of nature there is something of the marvelous."

But remember, March Mammal Madness features 65 species, but only one will be crowned 2023 Champion. Prepare yourselves for heartbreak, hilarity, & horror as fortunes & fates rise & fall, in a glorious story of science. We will bring you cliffhangers, surprises, non-character players, plant carnage & SO MUCH MORE!

Sometimes, rarely, a much less-likely combatant triumphs as we have built in some randomization into the tournament. This is why we write battles with unexpected but evidence-grounded plot twists, and other narrative techniques such as 3rd party interventions. This is part of the suspense, surprise, and collective experience of March Mammal Madness.

As we wrote in our eLife paper in 2021, "March Mammal Madness upends the stereotype of science as dry, prescriptive disciplines and shows that science and scientists can be, and should be, creative and fun. Scientists situate ourselves in the domain of data collection framed by hypotheses and predictions as we speculate about the world(s) around us.

But fundamentally these are just grown-up words for ideas hewn from imagination and the creative combination of what is known to journey into the unknown. March Mammal Madness is collective, "performance science" – the stories of animals, told creatively with awe for the natural world.

We celebrate species and the ecosystems they inhabit, the scientists who conduct studies, and the funders who make the research possible. For a few weeks each year, a vibrant and diverse March Mammal Madness community comes together to collectively marvel at our living planet's beauty, harshness, and fragility. We acknowledge that humans are at the root of many of the problems we highlight, but also recognize that the communities we reach are essential branches of any solutions. By fostering a greater love and respect for biodiversity, we hope that engaged students and curious publics will be inspired to transform their affection into action and reverence into protection."

Hinde, Katie, et al. "March Mammal Madness and the power of narrative in science outreach." *Elife* 10 (2021): e65066.



# SCIENCING MMM

Through the years, folks have found out this Battle MMMeal comes with a side of science fries & a cool refreshing science. March Mammal Madness does not force the animals to BATTLE like Gladiators, but rather contrives encounters where the animals arrive with their full suite of physical and behavioral traits... and that includes adaptations to AVOID combat.

Fighting is RISKY for animals. Fights can cause immediate death, slow death from infection, slow death from 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.

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 of chewing & enzymes for digesting are limited & finite.

Across many animal species, natural selection has favored animals whose traits enable them to smartly respond to the situation- cognition capacity for rapidly weighing risks, benefits, & costs of a contest, conflict, context, or predator-prey situation. This is even the case typically for species with combat weapons. "Species that bear weapons almost always perform displays before engaging in physical contact" (Palaoro & Peixoto 2021).



## 2023 MMM

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# SCIENCING MMM

Also, anti-predator vigilance interferes with foraging, fleeing takes energy, & adaptive anti-predator strategies account for short-term risk in locations of high long-term risk... like water holes (Dröge et al 2017; Stankowich & Blumstein 2005).

Among carnivores, myriad adaptations for avoiding direct competition for prey (niche partitioning) or suppressing competition (competitive exclusion) can dramatically shape ecosystems (Karanth et al. 2017; Hunter & Caro 2008). Oh and when animals are fighting (& romancing)... DISTRACTIONS INCREASE THIRD PARTY PREDATION! (Ota 2018).

Natural selection has favored awesome adaptations for those who fight, flee, hide, peek, retreat & sneak away to live another ah, amount of time 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.”

So BUCKLE UP BUTTERCUPS, this is March Mammal Madness! Sometimes it's CARNAGE, sometimes it's BORING, sometimes it's UPSET CITY where the grass is green and gulls are petty...

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.**

## CITATIONS:

Dröge E, Creel S, Becker MS, M'soka J. Risky times and risky places interact to affect prey behaviour. *Nature ecology & evolution*. 2017. 1(8):1123-8.

Dugatkin LA. 2023. Power struggles in nature can be more subtle, nuanced and strategic than just dog-eat-dog. *The Conversation*.

Hunter J, Caro T. Interspecific competition and predation in American carnivore families. *Ethology Ecology & Evolution*. 2008. 20(4):295-324.

Karanth KU, Srivaths A, Vasudev D, Puri M, Parameshwaran R, Kumar NS. Spatio-temporal interactions facilitate large carnivore sympatry across a resource gradient. *Proceedings of the Royal Society B: Biological Sciences*. 2017. 284(1848):20161860.

Ota, K. (2018). Fight, fatigue and flight: narrowing of attention to a threat compensates for decreased anti-predator vigilance. *Journal of Experimental Biology*, 221(7), jeb168047.

Palaoro AV, Peixoto PE. The importance of animal weapons and fighting style in animal contests. *bioRxiv*. 2021. 1:2020-08.

Stankowich T, Blumstein DT. Fear in animals: a meta-analysis and review of risk assessment. *Proceedings of the Royal Society B: Biological Sciences*. 2005. 272(1581):2627-34.





# WILD CARD

SHREW-MOLE (*Neurotrichus gibbsii*) vs. BUMBLEBEE BAT (*Craseonycteris thonglongyai*) in the battle that determined a berth to the "Big Show." Shrew-mole looks like a mole, is the size of a shrew, has the lower body temperature of a mole, & faster metabolism of a shrew #HangryLikeAShrew. Shrew mole lives on the west coast of North America, from the Fraser River in British Columbia, Canada south to Monterey County, California USA.



US National Park Service / Wikimedia Commons / Public Domain

Bumblebee Bat weighs 2.0 grams in length & 33 millimeters in weight, coming in ~80% lighter & ~75% shorter than shrew mole. This teensy bat lives in Thailand & Myanmar, and was first collected by eminent Thai biologist Kitti Thonglongya, who sadly passed away before describing the bat. But colleagues named the species in his honor! Genetic evidence suggests BUMBLEBEE BAT's range could be explained by "Sweepstakes Dispersal" events "via storms,

cyclones or typhoons". It's unlikely they got to where they currently live on those teeny little wings alone!



Niran Anurakpongsathorn / iNaturalist / CC-BY-SA 4.0

Tonight's BATTLE LOCATION was determined by COIN TOSS, giving Shrew-Mole #HomeHabitatAdvantage on Destruction Island, WA, Quillayute-Needles National Wildlife Refuge, home to the Quileute Nation. Shrew-mole scurried along the forest floor searching for worms, insects & isopods to eat. Dusk approached as rain patters leaves.

Meanwhile, on the other side of the globe, dawn approaches in Myanmar. Bumblebee Bat had been flying toward the roost in its limestone cave after a night of mediocre hunting due to wetter and windier conditions from the La Nina cycle. MMMagic whooshed Bumblebee Bat, in an UNPRECEDENTED sweepstakes dispersal, to a wilderness island on the outer coast of Washington State! Shrew-mole had just settled in for a nap, as it does every 2-18 mins, under a fallen maple leaf

# 2023 MMM

Destruction Island, wear Bumblebee Bat destroyed Shrew-Moles chance at MMM glory.



Carmen Bubar, NPS / Wikimedia Commons / Public Domain

THWACK! The wind tumbled Bumblebee Bat to the ground, cartwheeling across the napping Shrew-Mole and dislodging the maple leaf blanket! Shrew-mole dived back under it's sleep leaf, and held motionless sniffing the stranger for indications of danger. Bumblebee Bat needed food, the rain kept the flying insects down, but this bat has several hunting strategies, including catching invertebrates from the ground. Shrew-Mole can't stay still for long, has to get calories, and resumes hunting too. Bumblebee Bat behan munching on a familiar food source... Daddy Longlegs (harvestman, arachnids) while Shrew-Mole was hot on the hunt for beetle grubs along a fallen log... Shrew-Mole ran off the field of battle! BUMBLEBEE BAT OUTLASTS SHREW-MOLE! Narration by Dr. Tara Chestnut.

## Citations:

Campbell, K. L., & Hochachka, P. W. (2000). Thermal biology and metabolism of the American shrew-mole, *Neurotrichus gibbsii*. *Journal of Mammalogy*, 81(2), 578-585.

Carraway, L. N., & Verts, B. J. (1991). *Neurotrichus gibbsii*. *Mammalian Species*, (387), 1-7.

Dalquest, W. W., & Orcutt, D. R. (1942). The biology of the least shrew-mole, *Neurotrichus gibbsii minor*. *The American Midland Naturalist*, 27(2), 387-401.

Giribet, G., Vogt, L., Gonzalez, A. P., Sharma, P., & Kury, A. B. (2010). A multilocus approach to harvestman (Arachnida: Opiliones) phylogeny with emphasis on biogeography and the systematics of Laniatores. *Cladistics*, 26(4), 408-437.

Hill, J. E., & Smith, S. E. (1981). *Craseonycteris thonglongyai*. *Mammalian species*, (160), 1-4.

Puechmaille, S. J., Gouilh, M. A., Piyapan, P., Yokubol, M., Mie, K. M., Bates, P. J., ... & Teeling, E. C. (2011). The evolution of sensory divergence in the context of limited gene flow in the bumblebee bat. *Nature Communications*, 2(1), 573.

