

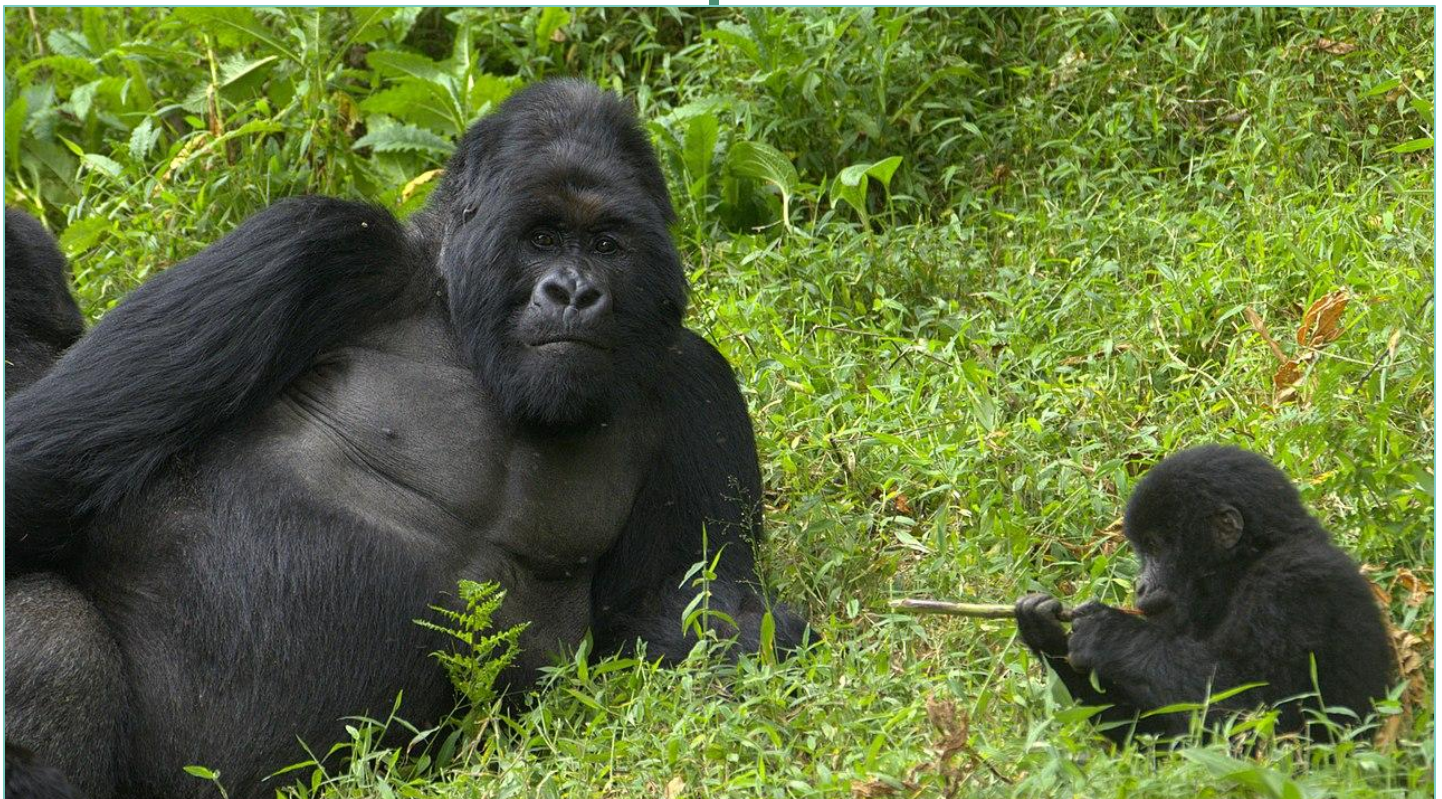
R1: Dad Bods

Although March Mammal Madness routinely considers animal traits for combat, for some species, males play really important roles in nurturing young. Here we showcase some AMAZING ANIMAL DADS! Some featured combatants have adaptations for behavioral care, some with anatomy for protecting young, some that can nourish young, and some Dads that, unrelated to their Dad behavior, will haunt my nightmares.

We also welcome NEW NARRATOR Dr. Mallika Sarma. As a PhD student, Dr. Sarma studied

physiological changes in fatherhood among humans with her advisor & leading expert on the Biology of Fatherhood Professor Lee Gettler. In many families & cultures around the world, human dads do awesome amounts of kid care. Humans have biological traits of fatherhood, such as hormonal changes, that have an affect on body shape, hence Merriam-Webster Dictionary adding "Dad Bod" in 2021. Importantly, the term "Dad Bods" is about NORMALIZING normal bodies, centers body positivity, and honors caring Dads.

Because as always, March Mammal Madness is here to celebrate how natural selection shapes adaptations- from tooth and claw to dad bods.

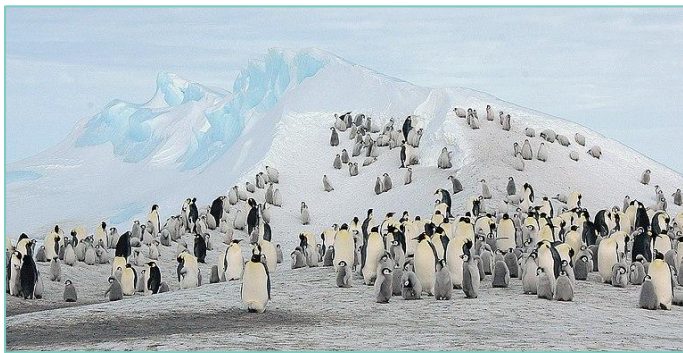


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Emperor Penguin (1) v. Lined Seahorse (16) --

Emperor Penguins (*Aptenodytes forsteri*) are the largest species of penguin (100 lbs/45 kg and 3.3 ft/100 cm) and 5th heaviest bird overall. While males and females have the same yellow and black markings, males are about 30% bigger than the females. This extra bulk helps them incubate their eggs against two months of harsh Antarctic winter until the chick is ready to hatch. The Lined Seahorse (*Hippocampus erectus*) are named for the white lines that help them camouflage themselves into their seagrass-based habitats. The Lined Seahorse is small (15.3cm and 14.3g), with males being slightly bigger than females. Lined Seahorse dads are responsible for the care of seafoals. The females deposit the eggs into the male's "brood pouch", where they're fertilized and incubated for about two weeks. Lined seahorses typically have just one partner in their life (monogamy) with whom they engage in complex bonding behaviors (Lin et al. 2008).



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In Verleger Point, West Antarctica, Emperor Penguins live in some of the harshest and remote environments on the planet. Scientists from the British Antarctic Survey use satellites to look for emperor penguin poop stains (guano streaks) on the ice to identify new colonies! Right now is the start of the Antarctic Autumn and a huge male emperor penguin is bulking up for the winter breeding season. Penguin has been diving for krill and silverfish, but he's nearly had his fill for the day when he spots something drifting closer to the surface. The Lined Seahorse is struggling in these cold waters -1C around Antarctica. Lined Seahorse is swimming towards the sea ice, hoping for warmer shallows when Penguin swims from below... and swallows Seahorse whole! **EMPEROR PENGUIN SWALLOWS LINED SEAHORSE!** Narrated by Dr. Mauna Dasari.



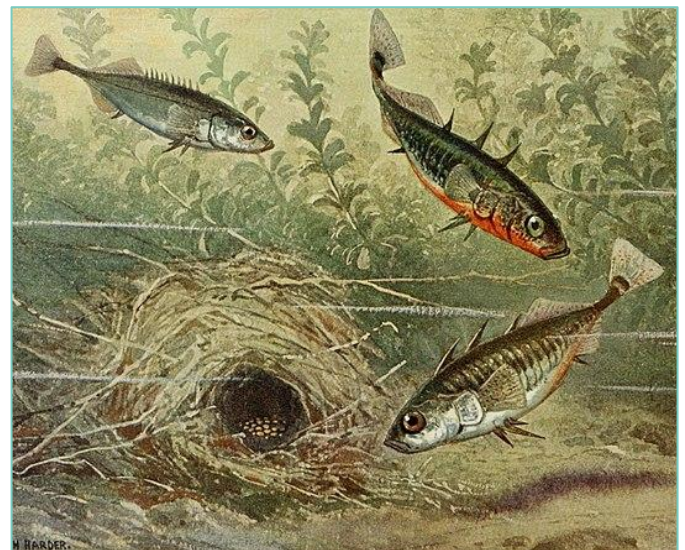


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Greater Rhea (2) v. Three-spined Stickleback (15)

As a flightless bird, the male Greater Rhea (*Rhea americana*) stands at 5 ft tall and 85lbs, with glorious black and gray plumage. Rhea's extra-long wings and legs are great for balancing, pivoting, and running away from trouble. Rheas are devoted dads and provide all care for chicks, moms peace out after producing and laying the eggs. Dads build the nest, incubate the eggs, and care for the nestlings after hatching (Fernandez & Reboreda, 2003). The Three-spined Stickleback (*Gasterosteus aculeatus*) is a little fish, only 3-10 cm long, but gets its name from its 3 dorsal spines. Breeding males have a red belly, blue sides, and iridescent green or blue eyes. Male Sticklebacks also do all the care of the young – Dads defend their territories, construct nests, and then watch out for their newly hatched and vulnerable babies (also called "fry"). Evolutionary biologists LOVE the Three-spined Stickleback because their repeated adaptation from the ocean to freshwater is a great model for parallel evolution.

In Buenos Aires, Argentina, the Greater Rhea roams a temperate grassland which gradually changes from flat, low marshes surrounded by short grasses to some woodland at higher elevations. Greater Rhea scans vigilantly for predators as his 3-month old chicks drink from one of the many little streamlets running through the marsh. MMMagic transports Three-spined Stickleback into the streamlet amidst the chicks. Sticklebacks are great at adjusting to changing saltiness of water between sea and stream (high tolerance for fluctuating salinity), as long as the water is clear the Stickleback can still forage for food. Greater Rhea's chicks tromp-slosh playfully in the steam and Greater Rhea begins to herd his chicks back to the nest. Chick tromping has churned up mud, ruining the water for Stickleback foraging. Stickleback swims and flops furiously in the streamlet to escape the playful rhea chicks and muddy water. CHOMP! Greater Rhea makes a fast snack of the fish. GREATER RHEA DEFEATS STICKLEBACK! Narrated by Dr. Mallika Sarma.



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Wolverine (3) v. Giant Waterbug (14) – Giant Waterbug (*Belostoma lutarium*), found in aquatic habitats in the Eastern half of the US, are ambush predators adapted for "extra-oral digestion" (Swart & Felgenhauer 2003). Or said another way: Giant Waterbugs grab and hold underwater prey with their grasping front legs while impaling prey with a mouth syringe to inject liquifying spit so waterbug can slurp up through a mouth siphon dissolved tadpoles like a milkshake. After a lady Giant Waterbug deposit an egg pad onto the Dad's back, male Giant Waterbugs keep the eggs away from predators and keep the eggs moist by doing push-ups at the water line, known as brood pumping. Wolverine (*Gulo gulo*) walks on snow to scavenge the carcasses of lynx kills across his circumpolar range and is the heaviest terrestrial mustelid (30kg). Wolverine has brownish-black black fur that is often crossed by a gorgeous golden band from their crown, across shoulders, to their rump. Wolverine Dads sometimes visit dens of females with young and have been found to roam around with their kids after kids move out of their mom's den. This time with Dad, on the cusp of adulthood, may be an important time of learning or may improve survival.

In the spring-snow covered Rocky Mountains of Western North America, the Wolverine's loping gallop covers wide distances across his large



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territory searching for winterkill carcasses. Mid-March, the Giant Waterbug has just emerged from over-wintering in an inactive state, protected in the leaf litter clumped in the shallows of a shoreline in the Shawnee National Forest in Illinois. Hungry and with breeding season around the corner, Waterbug needs calories. Waterbug submerges into the water, assuming an ambush position, extending his abdominal breathing snorkel (respiratory siphon) beyond the water for air... tiny BONK! Waterbug's snorkel has hit ICE?! MMMagic has transported Giant Waterbug to the frigid Rockies, but luckily there is some gap between water and ice so this air-breathing insect is in no danger of suffocation except... Wolverine's wide paw bursts through streambank ice, crushing Giant Waterbug. WOLVERINE DEFEATS GIANT WATERBUG! Narrated by Prof Katie Hinde.



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Siamang (4) v Darwin's Frogs (13) - Siamangs (*Symphalangus syndactylus*) are about twice the size of other gibbon species (adults ~26lbs/12kg). These guys stand ~1m tall... if you can find them standing! Siamangs prefer to swing from branch to branch using their extremely long arms (and their 1.5m armspan) in a type of movement called brachiation. Siamangs are the greatest of "lesser apes" at being Dads, carrying their offspring through the forest. Males are the main carriers of young once babies are a year old and have become really heavy for mom to carry and are not nursing as often. Darwin's Frogs (*Rhinoderma darwinii*), are funny little guys with an average body length (or snout-to-vent length- SVL- for all you budding herpetologists) of ~27mm or ~1 inch. In Darwin's Frogs, Dads carry their tadpoles in their vocal sacs. Darwin Frog Dads transport and nurture the fertilized eggs and tadpoles in their big cheek pouch (gran saco bucal aereo) for 6-8 weeks before they come out as fully metamorphized froglets (neomelia).



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Early morning in the tropical rainforest of Gunung Leuser National Park, Indonesia, in the Tropical Rainforest of Sumatra, a UNESCO World Heritage Site. Darwin's Frog finds itself MMMagicked to a slightly warmer, more tropical environment than the temperate rainforests of Chile and Argentina. While the temperature difference is not too bad, this frog is not a fan of being so high in the canopy! Darwin's Frog blends into the environment thanks to their ability to camouflage as a leaf. He's looking around for any predators when he hears a tentative whoop... whoop... whoop... WHOOPWHOOPWHOOPWHOOPWHOOP.



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Then a deep inhale and scream reverberates through the forest! Darwin's frog is panicking as the entire tree starts shaking! The Frog grips his branch as other leaves drop around him! A black fuzzy figure seems to be flying through the tree branches- it's Siamang brachiating while calling (vocalizing)! The deep reverb is coming from his

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throat sac - it's the size of a grapefruit when fully inflated. Suddenly, Darwin's frog's branch is yanked down by a lesser ape swing and the frog plummets toward the forest floor as a small siamang family's unique territorial song reverberates throughout the forest. SIAMANG DEFEATS DARWIN'S FROG! Narrated by Dr. Mauna Dasari.

Pacific Spiny Lumpsucker (5) v Peacock Wrasse (12) - Good evening from the Aleutian islands in the North Pacific, tonight we feature a fishy combat between the Pacific Lumpsucker and the visiting East Atlantic Peacock Wrasse. The Wrasse is a *swell* dad, pun intended, spending over a month on his carefully constructed algal nursery mat. During this time the big ones stay and defend the structure. Medium sized wrasses (12-20 cm) will sometimes wander, looking for mating opportunities. Peacock Wrasse live along the coast of Spain and this fine fellow is a bit



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confused to be in Alaska. The Wrasse, out of place, recognizes some of the food options, there ARE octopuses and sea urchins here in the Aleutian Islands. Meanwhile, our Pacific Spiny Lumpsucker is living his best paternal life, stuck to a rock crevasse and defending his brood of 202 eggs, on average. The rocky intertidal zone of the North Pacific isn't the easiest place in the world to make a living, especially if your body shape can be kindly described as "Ping-Pong ball," so the Lumpsucker is bedazzled in a series of overlapping armor plates. The hungry Wrasse prods around the cold waters, looking for food.

The water is cold, the terrain strange, and the predators unknown. The 3-cm Lumpsucker is enjoying the sensation of flushing cold, highly oxygenated water over his eggs. The Wrasse, no stranger to biting highly ossified things, sees this bright orange and white ping-pong fish...



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JUST CHILLING THERE, I mean, does he not know about predators?! The wrasse strikes! Lunging after the lumpsucker, trying to dislodge it- the Wrasse strikes but the lumpsucker isn't called a sucker because he was born yesterday - NO! Lumpsucker's pelvic fins are fused to create a powerful suction cup! The Wrasse is unable to bounce the lil' guy off his perch. Thwap! Again, the wrasse strikes and, this time, scrapes his face on the SPINY Lumpsucker's tooth-like armor. Frustrated by this little fish nugget who refuses to budge, the Wrasse swims off PACIFIC SPINY LUMPSUCKER DEFEATES EAST ATLANTIC PEACOCK WRASSE! Narrated by Prof. Josh Drew.

Bat-Eared Fox (6) vs. Spotted Sandpiper (11) – Bat-Eared Foxes (*Otocyon megalotis*), named for their enormous ears, are a small 12-lb canid and mostly sandy-coated with yellow-brown colors, except for some black on their legs, tail, and a black Zorro-like mask across their eyes. While moms extensively forage during peak lactation, Bat-Eared Fox Dads spend significantly more time near den sites protecting young from predators (like jackals), huddling with young, and grooming parasites from the fur of young. Fox babies are variously called kits, cubs, and pups. For Bat-Eared Foxes, Dads spending time near dens is important for survival of the young. The Spotted Sandpiper (*Actitis macularius*) is a widespread migratory bird throughout North America living along lakes, streams, and wetlands. The Spotted



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Sandpiper gets its name from the prominent dark spots that develop on their plumage during the breeding season. Spotted Sandpipers with the fewest feather mites, healthy immune system, and heavier body weight have the largest, most impressive plumage spots. Female spotted sandpipers especially signal quality through plumage spots, a role reversal from most other



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birds. Male Spotted Sandpipers incubate ~4 eggs in ground nests for 21 days and then provide all the chick care after nestlings hatch. Dads will even use the "broken wing display"- behaving as though they are dragging a broken wing along the ground, flapping their tail feathers while piteously squealing to tempt predators away from the nest and vulnerable young.

In the Laikipia Plateau of central Kenya, March marks the beginning of a rain season that will stretch into July, and ephemeral ponds begin to appear in the parched semi-arid grasslands. Spotted Sandpiper is migrating from Mexico toward northern breeding grounds in Canada... with dusk approaching, the Spotted Sandpiper begins circling down to seasonal ponds amidst sandy dunes in a Western Red Desert in the US. MMMagic transports Spotted Sandpiper to semi-arid highlands of Kenya that look almost similar at a glance. Bat-Eared Fox Dad is on a brief foraging excursion from the den, while the Spotted Sandpiper lands on the shore of a pond, darting his head back and forth in the muddy flats catching termites with his little beak. The Spotted Sandpiper's walks with a distinctive teetering, bobbing the rear half of its body rhythmically. In 1892, C.C. Abbott wrote "How aptly they have caught the motion of the rippling water"

speculating this as a possible tactic for camouflage. BUT the Bat-Eared Fox has spotted a most tasty morsel...The Spotted Sandpiper's fast beak speedsnaps a termite on wing as the Bat-Eared Fox darts in! With quick, short wing beats, the Spotted Sandpiper is aloft over the water, fleeing the canid disturbance! (PSA: Please leash your dogs where shorebirds nest). As Spotted Sandpiper departs the field of battle, the Bat-Eared Fox gorges on what he'd dashed in for... termites. Bat-Eared Fox is a termite specialist, you know. BAT-EARED FOX OUTLASTS SPOTTED SANDPIPER! Narrated by Prof. Katie Hinde.

Owl monkey (8) and Caspian tern (9): The Caspian tern (*Hydroprogne caspia*) is the largest tern in the world (~21 inches long, 27.5 oz, wingspan of about 50 inches) and is found in parts of North America, Europe, Asia, Africa, and Australasia because they have the furthest migration of any animal. Caspian terns prefer to live and nest in coastal and wetland habitats. Like many other tern species, they hunt fish by flying over shallow water, looking down, and diving to catch their prey. "In 2022, Caspian tern populations in the N. American Great Lakes region were devastated by avian influenza (H5N1), which has been in the news recently for making the jump to





Aotus zonalis

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some mammal species...” (Graham, 2022). Male and female owl monkeys (*Aotus azarae*) show no differences in size or coloration (called "sexual monomorphism"). Both sexes weigh about 1 kg and have a head/body length of 14.5 inches, plus another 15.7 inches of tail. Sometimes called "Azara's night monkey" or "southern night monkey" and known locally as "mirikinà", owl monkeys make their home in the trees of South America. Their range includes Brazil, Bolivia, and Paraguay, as well as small parts of Peru and Argentina. Unlike the rest of the species in the genus *Aotus*, which are all nocturnal, Azara's owl monkey may be active during the day and night, a pattern scientists call "cathemeral."

Tonight's battle takes place in the semi-deciduous gallery forest of the Argentinian Chaco, where Actual Living Scientist Eduardo Fernandez-Duque founded The Owl Monkey Project in 1996.

Owl Monkey is foraging for fruit alongside his mate. Unlike most mammals, owl monkeys form long-lasting monogamous pair-bonds and genetic studies show little evidence of extra-pair paternity (Huck et al 2014). Owl monkeys give birth in the spring (Oct-Dec). Sure enough, this pair of monkeys has a 3-month old baby with them, clinging securely to...DAD's back. Male Owl Monkeys put their Dad Bods to good use by carrying infants full-time from 3 weeks-5 months of age. Male Owl Monkeys aren't the only dads who help their offspring get around: Last year a team of researchers found that among Caspian terns, male parents primarily migrate with young. Tonight, M M Migration has brought Caspian Tern to Owl Monkey's home turf, although with no young tern in tow: Caspian Terns don't breed until late May or early June each year. Startled to find himself in unfamiliar surroundings, Caspian Tern vocalizes loudly. Owl Monkey pauses his foraging and looks around for the source of the foreign sound, a potential predator, perhaps? Caspian Tern IS hungry... But owl monkey is not his typical prey, and Caspian Tern sees no opportunities for shoreline hunting in this dense, dark, INLAND environment. Rising into the sky above the tree canopy, Caspian Tern takes wing to search for less enclosed spaces than this forest. OWL MONKEY OUTLASTS CASPIAN TERN! Narrated by Dr. Lara Durgavich



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Greater Flamingo (7) Dayak fruit bat (10) - Like TSwift sings, greater flamingos (*Phoenicopterus roseus*) have got that "red feather classic thing" the ladies like and NEVER go out of style. Looking that good in both males and females takes work. Flamingos apply preen oils (from gland secretions) to their bodies like makeup, enhancing their natural beauty with brighter colors. Brighter flamingos tend to nest earlier than dull individuals, a potential advantage that could mean getting the best nesting spots in the colony. While both male and female greater flamingos take care of chicks, flamingo dads can spend more time incubating and defending the nest from potential threats than females.

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Dayak fruit bats (*Dyacopterus spadiceus*) live in the rainforests of Peninsular Malaysia and Borneo, where they are quite rare. Weighing about 70-80 grams, they feed on hard fruits in the forest canopy. Among mammals, Dayak fruit bats are particularly interesting because multiple males captured in Malaysia produced milk from their mammary glands. But these dads make very little milk and their skin texture suggests pups aren't nursing, so dadbat milk production (galactorrhea) may be more a byproduct of hormones from behaviorally caring for pups than nourishing pups.



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The late afternoon sun glows golden over Laguna Fuente de Piedra in southern Spain. Home to the second largest greater Flamingo colony in Europe, the breeding party is just getting started in mid-March. Our father Flamingo has been sitting on the nest for the past several hours. He shifts slightly, revealing the single precious brown speckled egg perched on the mud mound nest. Father Flamingo gives a big stretch, showing off his full height (187 cm) and preens his bright pink feathers. Thanks to those lovely feathers, our pair managed to get one of the best nesting spots in the colony. Our Dayak Fruit Bat, having been roosting cozily in a cracked tree trunk in Malaysia, is unceremoniously dropped into the sky above the noisy flamingo flock. SQUAWK! The bat twirls as a yellow-legged gull swoops down, landing just to the side of the flamingo on his nest. The gull side-eyes the flamingo, looking for an opportunity to grab that tasty egg. Seeing the gull, our Flamingo stretches his neck out to its full length, ruffling his feathers while swiping his hooked beak towards the approaching gull. The gull hops closer and the Flamingo's hooked beak clamps onto the gull's beak. BINGO! The gull yanks upwards, pulling the flamingo up and away from

the egg. Quick as a flash, the gull breaks free and slips under the flamingo's legs to swipe at the egg. Egg in beak, the gull takes off, with the flamingo hot in pursuit. That leaves our bleary-eyed fruit bat still circling above the glimmering lake on the field of battle! DAYAK FRUIT BAT OUTLASTS THE GREATER FLAMINGO! Narrated by Dr. Alyson Brokaw.

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