September 01 – What's the Difference Between Rabbits & Hares?

Can you tell a rabbit from a hare?

Rabbits and hares are closely related. They belong to the same order (Lagomorpha) and family (Leporidae), but they have separate genera.

The 30 or so species of hares fit into just one genus (*Lepus*), whereas the 30 species of rabbits branch out into 10 genera, including the North American genus *Sylvilagus*, more commonly known as cottontails.

In general, rabbits are smaller than hares. Rabbits usually live in areas with forests or shrubs, and they dig underground burrows or make nests in small depressions in the ground. Baby rabbits are called kittens or kits, and they are born naked and blind, unable to fend for themselves. In contrast, hares do not burrow underground. They usually live in open areas, such as deserts or prairies, and have young in simple nests on the ground. Hare babies (known as leverets) are born with fur and open eyes, and they're much better able to take care of themselves than rabbit kittens are.

Because they live in open areas, hares rely on speed to escape from predators, as opposed to rabbits such as cottontails, which often dive into their nest holes or hide under brush when danger is near.

September 02 – Octopuses

Can you name an animal that has three hearts and blue blood? They squirt ink to deter predators; and being boneless, they can squeeze into (or out of) tight spaces. Of course, the answer is the octopus.

They have three hearts because one pumps blood through its organs, and the two others pump blood through its gills. Octopus blood is blue because it has a copper-based protein called hemocyanin.

When an octopus is swimming, the heart that delivers blood to the organs stops beating. This exhausts the octopus, which is likely the reason they prefer to crawl rather than swim.

In all, there are 289 species in the genus *Octopus*.

Some people call their appendages tentacles, but that is incorrect; they are arms. The arms seem to have a mind of their own. In fact, two-thirds of an octopus' neurons are in the arms rather than its head. That means that an octopus can focus on exploring a cave for food with one arm while another arm tries to crack open a shellfish.

And how about this! Octopuses have taste buds in their suckers on their arms that enable them to taste what they're touching.

September 05 – How High Can Birds Fly?

Have you ever wondered how high birds can fly? I mean, we imagine cranes winging over the Himalayas, but it's hard for people to even walk up to the tops of those mountains, which can reach 8,000 meters.

So, how about the Rüppell's griffon vulture, native to central & east Africa? They were confirmed to cruise at over 11,000 meters after one collided with an airplane at that altitude.

So what keeps these high fliers going? There are certainly physical adaptations that allow birds to reach exceptional heights.

For instance, they do not appear to suffer from altitude sickness or from cerebral or pulmonary edema, so that, unlike humans they do not feel ill when at high altitude.

Some bird species like bar-headed geese have been found to hyperventilate to increase their oxygen intake while flying. This rapid breathing makes their blood more alkaline, a change that in humans affects circulation to the brain. But geese are very tolerant of high pH (alkaline conditions), so blood flow to the animals' brains and bodies remains healthy.

Finally, the hemoglobin in their blood has quite a high affinity for oxygen binding, which maximizes oxygen uptake.

September 06 – Whale Sharks

Quick – what is the largest fish on Earth? The whale shark of course.

Whale sharks are so named because they are so big. They can grow up to 12 meters long, and weigh 20 tons. That's about the size of a school bus.

A whale shark's mouth is gigantic – about a meter and a half across. They have rows of over 300 teeth, but as filter feeders they do not use these teeth to eat. Good thing, because I have been swimming right along with them in the Sea of Cortez off the Baja California region of Mexico.

Whale sharks are solitary creatures, but they don't shy away from sharing feeding grounds with other whale sharks.

These sharks don't attack and tear apart their prey like many of their relatives. They open their mouths, let water in and with special pads they filter out food, and release the water and any debris back into the ocean.

Plankton are their main food source, but they also eat shrimp, algae and other marine plant material, sardines, anchovies, mackerels, squid, tuna and albacore.
Whale sharks have a long childhood. At the age of 25, the offspring are ready to have their own young. They may live 100 to 150 years.

September 07 – Sea Turtles

Sea turtles have been around for more than 100 million years.

There are seven species of sea turtle in all, and some are huge. The largest sea turtle is the leatherback which grows to over 2 meters in length and can weigh as much as my Subaru. I will never forget the night they came ashore to lay eggs on Matura Beach in Trinidad. It was awe inspiring to be right next to such a big and remarkable creature.

Sea turtles live all over the world, from Florida to Australia.

Of course, they are built for a life at sea and can stay under water for five hours.

And they are swimming machines - the leatherback sea turtle has been recorded swimming as fast as 35 kilometers per hour.

Loggerhead sea turtles drink salt water and excrete excess salt through glands by their eyes, which makes them look like they are crying.

The best way to spot sea turtles is snorkeling or diving in shallow tropical waters. Otherwise, it's staying up all night on a beach during nesting season waiting for the females to come ashore to lay their eggs. Sea turtles lay their eggs in bunches called a clutch, and a clutch may have 70 to 190 eggs in it.

Once the eggs are laid, the baby turtles don't receive any parental care whatsoever.

September 08 –Polar Bear Drownings

Polar bears generally avoid swimming long distances in the open sea. But increasingly they have no choice. A five-year study by scientists from the San Diego Zoo finds that Arctic sea ice melts faster and farther offshore in summer, and the bears have to swim longer distances to find ice and prey.

Using satellite telemetry to follow bears in the Beaufort Sea and Hudson Bay between 2004 and 2012, the scientists learned that when Arctic sea ice retreated to a record low level, 69 percent of tracked adult females swam more than 30 miles at least once – more than twice the number of bears that did so in earlier years with slower ice melt. The researchers report that the youngest, oldest, and skinniest bears are far more vulnerable to drowning. And that we can expect increased mortality as the sea ice continues to recede.

Of course, even though polar bears are considered marine mammals, they very much depend upon the ice for their survival. While they are good swimmers, polar bears typically hunt from the ice in order to catch their preferred prey of seals. And polar bears depend upon ice to rest, mate and raise their young, making them as much as any creature, built for a life on ice.

September 08 – Speedy Vision

Researchers from three universities in Sweden have for the first time determined that passerines, or perching birds, have the fastest eyesight of any vertebrates in the animal kingdom. In laboratory tests of three species—the blue tit, collared flycatcher and pied flycatcher—the researchers measured the number of changes per second that each animal can perceive with its eyes.

Though passerines do not have the powerful visual acuity common to eagles and other birds of prey, the small birds' vision—twice as fast as human eyesight—allows them to track flying insects, then predict the insects' next move in order to catch them. This ability to do "forward planning" also helps the birds fly through thick shrubbery without hitting branches while escaping from predators. Essentially, songbirds see the world in slow motion compared to how people see it, a skill that generally may be more typical in birds than visual acuity.

I know this may sound like an exaggeration to humans, who also are very sight-centric, it's interesting to envision just how such crazy-fast eye sight evolved in birds. But insectivorous songbirds have to really have super hero vision in order to survive.

September 12 – Unlikely Alliance

In the Florida Everglades, colonies of wading birds such as egrets and herons often nest in trees above alligator-inhabited waters. The reptiles keep raccoons and possums from preying on the birds. In return, according to University of Florida biologists, the gators get a much-needed seasonal supply of food (such as heron chicks or even adults).

Adult wading birds typically hatch more chicks than they can feed, and one or two nestlings usually die and end up in the water. Frequently, one young bird will get pushed out of their nest by a competitive sibling.

As a result, the researchers believe that in years with especially high bird-nesting, most of the breeding female alligators in the Everglades could be supported during the four-month dry season by dropped chicks alone.

Alligator-breeding season begins only weeks after bird-breeding season, and well-fed female gators likely lay more eggs. The scientists found that gators living near bird colonies are fatter and healthier than those in other areas without birds.

So, this dynamic relationship between nesting birds and crocodiles is one of mutual benefit, even though it is tough on the individuals that get eaten.

September 13 – Snowshoe Hares

The snowshoe hare is a North American species that gets its name from its outsized hind legs that are adapted for a life in the snow. Its other common name is the varying hare, referencing their seasonal change of color.

But as climate change decreases snow-cover duration, it's bad news for animals such as snowshoe hares that change color from white in winter to brown in summer as a form of camouflage. Without snow, white hares stand out like light bulbs, potentially making them easy targets for predators.

Now, after conducting new studies of radio-collared hares in Montana, researchers report that this coat-color mismatch does indeed increase predation. When snow comes late or leaves early, hares suffer a seven percent decline in their weekly survival rate due to increased predation. This is one of the most direct demonstrations of mortality costs that that has been documented for a wild species facing climate change.

Biologists speculate that some individual animals over time may be able to adjust the timing of their color molt as a kind of "evolutionary rescue." However, such dramatic and relatively quick changes to the seasons will have very complicated effects on the entire ecosystem, not just on snowshoe hares.

September 14 – Exotics Spreading Like Weeds

Nonnative plants are more widespread than native species in the lower 48 states**,** according to the first comprehensive study of the plants' distributions. Using innovative computer-modeling techniques during a two-year period, an international team of researchers examined the U.S. ranges of almost fourteen thousand native and nonnative invasive species.

And the results were very surprising. The researchers anticipated that the natives would be more widespread because they evolved in this country, but the team's computer analysis showed that native species are, in fact, much more limited in their distributions than nonnatives. One reason why: People aren't moving them around as much.

The researchers observed that the nation's ornamental plant trade, homeowner landscaping choices, and other human activities have helped exotic species overcome dispersal barriers that limit the spread of many natives. Invasives such as kudzu, oriental bittersweet, leafy spurge, and even English ivy also extend their ranges by outcompeting native plants for soil nutrients and other resources.

Botanists found that even invasive species introduced in only a handful of places are now distributed all across the U.S.

September 15 – Monarch Birthplaces

A new study of hydrogen isotopes in western monarch butterfly wings is yielding clues about where the monarchs were born—data that could help pinpoint habitat for protection.

Most monarchs that breed west of the Rocky Mountains overwinter along the California coast. Scientists from the University of California-–Davis studied the wings of 114 western monarchs from four overwintering sites. They analyzed two hydrogen isotopes in the wings and compared the findings with known ratios of those isotopes in regional rainfall patterns and milkweed plants, the only food monarch caterpillars eat.

This link from precipitation to milkweed to caterpillar to wing contributes to the understanding of where the butterfly grew up. The scientists found that 30 percent of the monarchs studied grew up in California's southern coastal range and 40 percent in the northern inland range, the first such quantitative estimate of the natal regions of overwintering monarchs and an aid for species conservation.

Of course, in addition to protecting the monarch butterfly habitat in California, Mexican conservationists recognize the vital need to protect the pine forests of Michoacan where most monarchs over winter.

September 16 – Each Penguin to Itself

Scientists have put miniature GoPro cameras on penguins to better understand their behavior.

They've discovered that the birds swim together to stalk groups of prey, but when it comes to catching and killing their meals, it's every penguin for itself. Researchers wanted to learn more about why little blue penguins, the smallest of the seventeen species of penguins in the world, formed groups when foraging, wondering if doing so gives them a better chance of capturing their anchovies, krill, and jellyfish.

During the breeding season, the penguins leave their nests at sunrise, and return after dusk to feed their chicks. But surprisingly, the penguins had no more chance of capturing a meal when they were in groups than when alone. The birds may swim together, but they apparently do not work together after they encounter prey.

The researchers did find that little penguins were more likely to encounter schooling prey than solitary prey when the birds foraged in groups. This suggested that penguins hunt in groups in order to find prey and avoid predation by safety in numbers. But once they encounter prey, the birds swim wildly, catching all the fish they each can, not coordinating their attacks like wolves or lions do.

September 19 – Elephant Hierarchy

You probably know that elephant herds are matriarchies, with the experienced grandmas in charge. But what happens when a matriarch is killed by a poacher for her ivory tusks?

It ends up younger female elephants assume the roles once held by their mothers, maintaining the networks that keep extended families together. Earlier research had established that elephant social structure is highly complex. But in this new study, researchers analyzed relationships within groups of elephants over time to understand how their social positions and connections could grow and change.

The scientists paid especially close attention to mother-daughter relationships. And the researchers were curious to discover how mother elephants might prepare young females to forge their own connections and assume adult social responsibilities. Scientists reported that in their study, after the loss of a matriarch, 70 percent of them had been replaced. They found that they could predict which younger females would step into vacant roles based on whose mother had previously held that position, establishing connections to other elephants whose mothers had interacted closely with their own mother--even if these young elephants had not previously been seen to spend much time together.

September 20 – Sea Cucumber

For many in the West, it might seem a marvel that the slug-like sea cucumber could be at risk of extinction from their popularity on dining tables. But to Asian consumers this news should be no great surprise.

Sea cucumbers are the less-glamorous cousins of starfish and sea urchins, occurring in all the major oceans and seas. Eaten in China and other southeastern Asian countries for centuries, they are appreciated for their soft texture, dietary and medicinal properties.

Dried tropical species can retail for up to 600 dollars per kilo in Hong Kong. And one cold-water species farmed in China and Japan sells for up to three thousand dollars per kilogram when dried.

They are regarded as one of the culinary delicacies of Chinese cuisine and are often expected to feature on the menu of festive and formal dinners.

With growing affluence in China, demand for sea cucumbers and other luxury seafood has surged in recent decades. Fishing pressure follows on from this demand. Recent research shows that sea cucumber fisheries have expanded into more than 70 countries, and intense fishing in low-income countries has depleted many wild populations.

September 21 – Facial Mites

You are not alone. Your body is a collection of microbes, fungi, viruses, and even other animals. In fact, you aren't even the only animal using your face. Right now, in the general vicinity of your nose, there are at least two species of microscopic mites living in your pores.

You would expect scientists to know quite a lot about these animals, given that we share our faces with them, but we don't.

Here's what we do know. Demodex mites are microscopic arachnids--relatives of spiders and ticks--that live in and on the skin of mammals, including humans. They've been found on every mammal species where we've looked for them except the platypus and their egg-laying relatives.

Generally, these mites live out a benign coexistence with their hosts. But if that fine balance is disrupted, they are known to cause mange among our furry friends, and skin ailments like rosacea and blepharitis in humans. Most of us are simply content--if unaware--carriers of these spindly, eight-legged pore-dwellers. And if hearing this has made your face feel a little itchy, you can rest easy. In an evolutionary perspective, humans and demodex mites are old, old friends.

September 22 – Bonobo Nature

Bonobos are the least known of the great apes. Yet they are so closely related to people that they share 98.7 percent of humans' DNA. Along with chimpanzees, they are humans' closest living relatives.

Still, barely anyone knows what a bonobo is. In a survey by the Humanoid Psychology Research Group, only 15 percent of college grads knew that bonobos are even great apes.

But bonobos are famous for one thing – they make love not war. Bonobos are wildly affectionate apes, frequently frolicking with any and all members of their group. Bonobos, who use sex to resolve conflict, have never been seen to kill each other. They share food, they are more cooperative than chimpanzees, and they are nicer to strangers than they are to friends.

To bonobos, a peaceful sexual existence is the most natural thing in the world. Unfortunately, not all is well on the left bank of the Congo where the bonobos live. Like many other tropical African primates, the species is endangered by encroachment into their forest homes, and the deadly bush meat trade that follows.

September 23 – Animal Olympians

As for running, everybody knows the cheetah is the gold medalist, clocking in at a recorded speed of 64 miles per hour. That's twice as fast as the quickest human. Even the fastest running bird, the ostrich, may also take home a medal in one of the running events, since they run 40 miles an hour.

And don't think just or race horses or greyhounds can out-sprint us. Try catching your house cat, a squirrel, or a rabbit in your back yard. Don't worry, though, us bi-pedalers would give the dromedary camel a run for its money--at least the fastest of humans would. Human runners max out at a speed of 23.4 miles per hour, and the dromedary camel tops out at 22.

In the pool, even Olympian gold medalist Michael Phelps would have some competition. Sailfish can reach a swimming speed of 67 miles per hour.
And if you think we're slow runners or swimmers compared to the animal kingdom, how about jumping? World champ Mike Powell had record-breaking jumps of 29-and-a-half feet in the long jump. But that's nothing for a red kangaroo which can leap 42 feet in a single hop.

September 26 – Homing Pigeons

Pigeons have extraordinary navigational abilities. Take a pigeon from its loft, and let it go somewhere it's never been before, and it will, after circling the sky for a while, head home.

This remarkable capacity extends to places tens -- even hundreds of kilometers from its home, and is all the more remarkable to humans because we are apparently incapable of this ourselves. But we have long made use of the pigeon's homing ability, principally for carrying messages in the past. And for several decades now, the pigeon has played center stage in scientists' attempts to understand the map and compass mechanisms fundamental to bird navigation.

Many theories have waxed and waned, from the reading of the Sun's arc, to the detection of long-distance infrasounds, to using the Earth's magnetic field. Today, new evidence is pointing to olfactory signals playing a key role in migration. So treating the art of pigeon homing as a natural learning laboratory is a new science into which researchers are just taking the first steps. And it seems we have yet to find the boundaries of these birds' abilities.

September 27 – Origins of the Animal-Human Bond

The first evidence of dog domestication dates back to 30,000 BC, in the form of a skull of a wolf-like creature found in a cave in Belgium. Evidence of cat domestication dates back to 7,500 BC, when a feline was buried with a human in a Neolithic village on the Mediterranean island of Cyprus.

Before they were pets, dogs helped humans hunt, and cats helped guard grain supplies by keeping rats and mice away. Eventually, people began to treat these animals more like pets.

But the Middle Ages were a grim period for cats and dogs. In 1233, Pope Gregory the Ninth issued the Vox in Rama, which suggested black cats were agents of Satan, prompting the massacre of tens of millions of cats throughout Europe. And in 1637, French philosopher Rene Descartes declared animals were soulless machines, which paved the way for experiments on living dogs.

It wasn't until the late 1800s and early 1900s that there was a rise in sentimentality toward dogs and cats. Flea and tick products appeared in the 1880s, and kitty litter was invented in 1947, enabling people to bring cats indoors.

September 28 – Luwak Coffee

Okay, this is the sort of thing that happens to zoo directors: I came back from a trip afield this morning and on my desk was a package with a mysterious note saying, "Don't tell your guests what they're drinking until after dinner." In the package was 500 grams of coffee beans -- Sumatran Luwak coffee beans.

Well, for the uninitiated, Kopi Luwak, also known as civet coffee, refers to the seeds of coffee berries once they have been eaten and defecated by the Asian palm civet. You see, the civet eats the berries for the beans' fleshy pulp, then in the digestive tract fermentation occurs. The civet's stomach enzymes seep into the beans making shorter peptides and more free amino acids. Passing through the civet's intestines, the beans are then defecated with other fecal matter and collected.

Naturally, things get messy from there. The traditional method of collecting feces from wild civets has given way to intensive farming methods in which civets are often kept in small cages and the whole thing kind of loses its romance. But what the heck, I'll serve this coffee soon, and we'll see what kind of reaction I get. It's probably a good way to separate the true animal people from the posers.

September 29 – The Effect of Wind Farms on Ocean Predators

Wind farms are banks of wind turbines that harness the wind's energy to produce electricity. Those located offshore can take advantage of mighty coastal winds to generate substantial amounts of power in a renewable manner. For instance, Denmark currently gets about 30 percent of its electricity from wind power.

To learn more about the potential environmental impacts these wind turbines have, scientists tagged harbor seals and gray seals on the British and Dutch coasts in the North Sea. Each tag was glued to the fur on the back of the seals' neck and carried a GPS tracking device to monitor the seals' every movement.

Intriguingly, upon analyzing the GOPS data, researchers found the harbor seals moved in a very striking grid pattern within two active offshore wind farms, swimming in straight lines between the wind turbines. The researchers suggest these manmade structures may act like artificial reefs, that shelter potential prey, making the areas attractive hunting grounds for the seals.

But it remains uncertain what the environmental consequences of offshore wind farms will be for seals and their prey. If these farms increase the total amount of prey available for seals, then the effects may be positive overall.

September 30 – Spider Myths

As I'm sure you know, there are a lot of myths about how dangerous spiders are. Perhaps the most pernicious is the idea that if you didn't see what bit you, it was a spider.

Spiders are blamed for all kinds of bites, bumps, rashes and growths that they likely had nothing to do with. The notion that spider bites are extremely common is also a potentially dangerous myth.

And many people believe that spiders are aggressive and eager to bite humans. Bites can occur when spiders feel threatened or surprised, but for the most part, spiders seem pretty oblivious to people. And even great big spiders like tarantulas are not dangerous to humans. Yes, they have big sharp fangs, but no, they won't kill you or even hurt you near as much as if you were stung by a wasp or hornet.

And a final myth about spiders is that they belong outside. In many parts of the United States, there are more than two dozen house spider species that have adapted to living in and around our sinks, tubs, and basements.

If you think it's necessary to gently capture them and put them outside, all you're doing is wildly disorienting them -- kind of like if you let a monkey loose who had grown up in a zoo. It's best for everybody just to leave them be.