

MAY 2020 VOL. 1 EDITION. 2

NTS NEWSLETTER

PUBLISHED BY THE NON-TRADITIONAL SPECIES CLUB AT THE UNIVERSITY OF ILLINOIS



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IVF IN CHEETAHS ?!

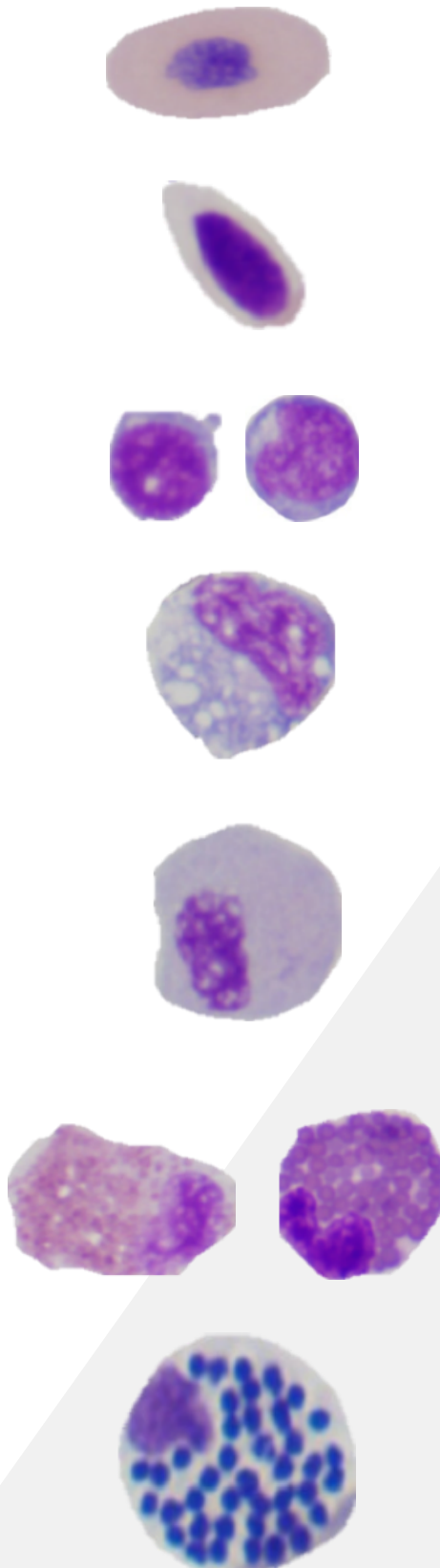
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THESE BLOOD CELLS SEEM FISHY!

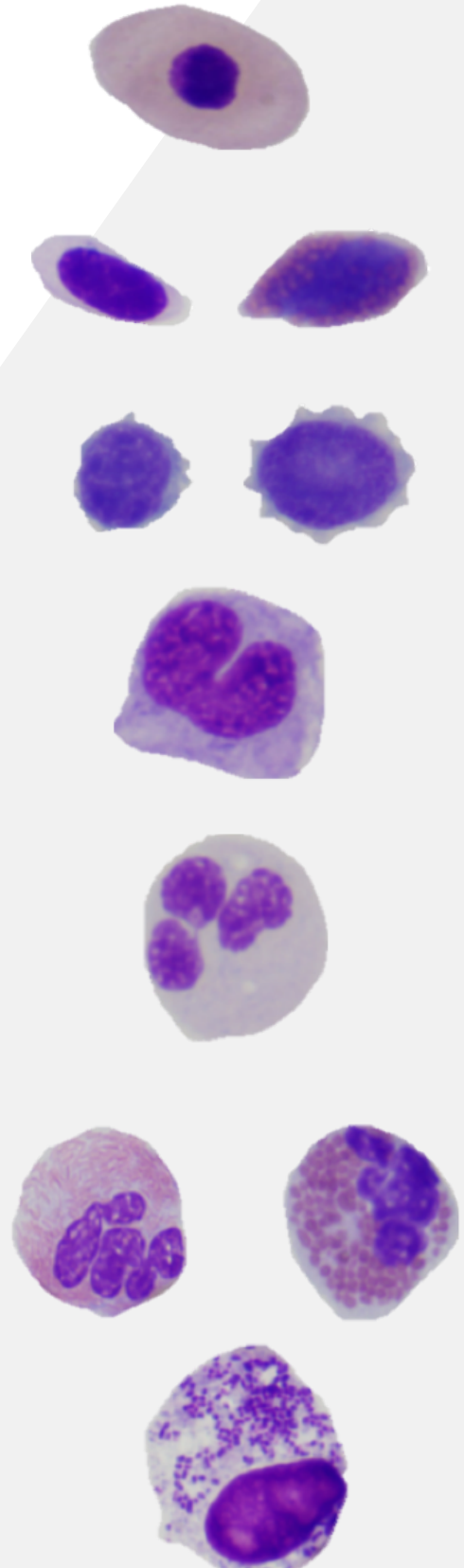
BY ALEC COLOSI

As the 2nd-year students learn clinical pathology, a lot of us can't help but notice a lack of several exotic species in the curriculum. Of course, we can't blame our administration – our curriculum is bursting at the seams with all the other necessary things we need to know! However, it is nice to look at some weird cells from weird animals every once in a while. So, let's see if we can name these blood cells! Answer keys on the following page.

Teleosts (bony fishes)



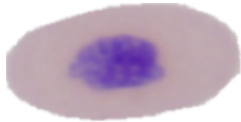
Elasmobranchs (sharks and rays)



ANSWER KEY

How'd you do ?

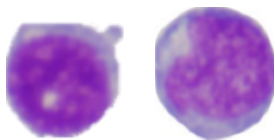
Teleosts (bony fishes)



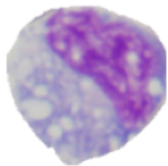
Red blood cells. Like many other exotic species, fishes have nucleated red blood cells.



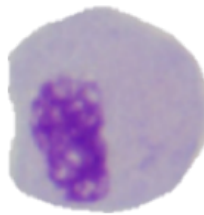
Thrombocytes. Like birds, fishes use these cells for hemostasis rather than platelets.



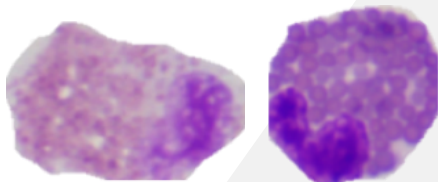
Lymphocytes (small and large). Lymphocytes are rounder and can be larger than thrombocytes.



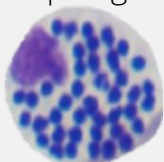
Monocytes. These look very similar to mammalian monocytes.



Neutrophils. In teleosts neutrophils usually have round nuclei. In elasmobranchs they can have round or segmented nuclei.

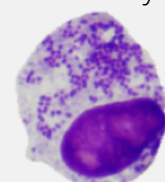
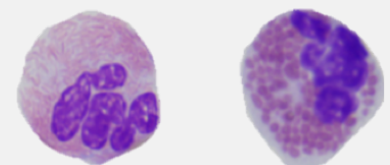
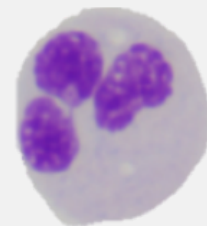
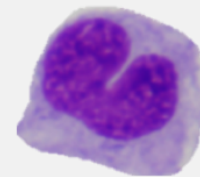
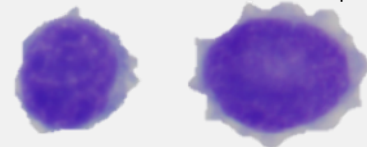


Fine Eosinophilic Granulocytes (Eosinophils) and Coarse Eosinophilic Granulocytes (Heterophils). FEGs have rod-shaped granules and CEGs have round granules. Some fish species have only one type, while others have both.



Basophils. These are rare in teleosts and sharks, but are commonly seen in rays.

Elasmobranchs (sharks and rays)



HOW TO STAY UP TO DATE ON EVERYTHING NON-TRADITIONAL SPECIES

BY KAYLA LADEZ

Summer break is right around the corner! Regardless of your summer plans, now is the perfect time to join a professional organization. Each group offers slightly different benefits, but most student memberships include online access to journals, private Facebook groups, discounted rates to conferences, scholarship and externship/internship opportunities, and more.

For example, Association of Avian Veterinarians student members have access to a free online education portal where students can take classes on topics from avian husbandry to analgesia and theriogenology.

Here are the yearly rates for our favorite organizations:

Association of Avian Veterinarians (\$15.00)

[\[https://www.aav.org/page/memberbenefits\]](https://www.aav.org/page/memberbenefits)

Association of Exotic Mammal Veterinarians (\$60.00) [\[https://aemv.org/member-benefits/\]](https://aemv.org/member-benefits/)

Association of Reptile and Amphibian Veterinarians (starting at \$39.50)

[\[https://arav.org/about/member-benefits/\]](https://arav.org/about/member-benefits/)

American Association of Zoo Veterinarians (starting at \$162.00)

[\[https://www.aazv.org/page/24\]](https://www.aazv.org/page/24)

Internal Association for Aquatic Animal Medicine (\$45.00)

[\[https://www.iaaam.org/membership-info\]](https://www.iaaam.org/membership-info)

World Aquatic Veterinary Medical Association (\$25.00)

[\[https://www.wavma.org/Become-a-member\]](https://www.wavma.org/Become-a-member)

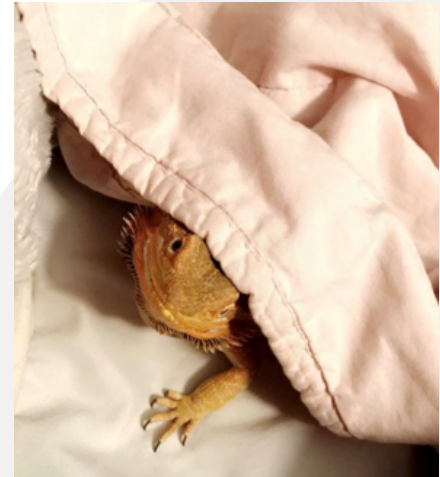
If you're interested in joining any of these organizations check out the benefits page of each site linked above.

**Most memberships are based on the calendar year, but AEMV runs July 1st - June 30th so I recommend adding a reminder to your calendar to join in July!

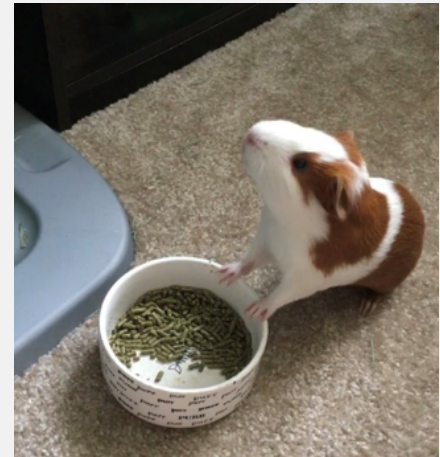
OUR FANTASTIC BEASTS AND HOW TO PET THEM!

FROM BEARDED DRAGONS TO ECLECTUS PARROTS, YOU CAN FIND A ZOO AMONG THE PETS OF THE VET MED FAMILY. TAKE A LOOK AT SOME FABULOUS NON-TRADITIONAL COMPANIONS:

BY SHEVON MEADOWS



Meet Lady! This classy gal is a 5 year old bearded dragon with sass. She likes to give her owner a run for her money by climbing very tall objects and jumping off them, along with running around the house and avoiding capture. Her hobbies include sunbathing and taking long walks on the beach. When she's not too busy living her best life, she enjoys snacking on collard greens, wax worms, and mangos for treats. Her greatest skill is giving people the side-eye. Thank Maddie Benjamin for sharing about Lady!



Meet Fred, aka Fred-Fred, aka Fredward, aka Freddie, aka Fwed-Fwed, aka Piggie, aka Piggledy-Wiggledy, aka Po-tate! Fred (et. al) is a year and a half old guinea pig that came to his owner by way of foster fail. He's a carrot and cilantro connoisseur and is a skilled wheet-wheeter with a knack for being an early morning alarm clock (sans snooze button we assume). His greatest quirk is his love of screaming...at plastic bags, the fridge door opening, and the cats. His owner would like to give a shout-out to Almost Home Humane Society for bringing them together and if anyone is interested in fostering pigs like Fred, please send her an email at kyliea2@illinois.edu. Thank Kylie Ayers for sharing about Fred!



Meet Blueberry! Blueberry is a leopard gecko that has been a resident at her estate for 9 months. She's a sucker for meal worms and has a talent for giving the side-eye. As a daredevil, Blueberry enjoys trying to jump off high places to her death and teasing the family dog (who still can't decide what Blueberry is). Adventurous at heart, she loves exploring the couch and window sills. Thank Alec Colosi for sharing about Blueberry!

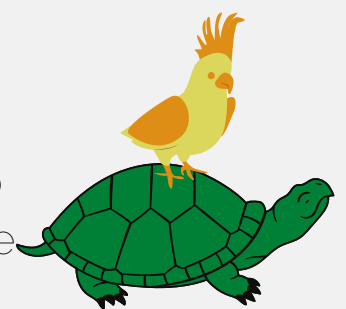


Meet Frank! Frank is a 5 year old eclectus parrot that is a popcorn fanatic. Frank was dropped off at the exotic clinic that his (now) owner worked at because he didn't talk enough. With his new owner, he won't stop and is known to be quite the smooth talker! When Frank isn't talking, he enjoys playing non-stop with new toys after verifying they won't kill him. Although he's a certified "butthead", his owner loves him nonetheless. Thank Ivana Levy for sharing about Frank!

WANT YOUR PET FEATURED ?



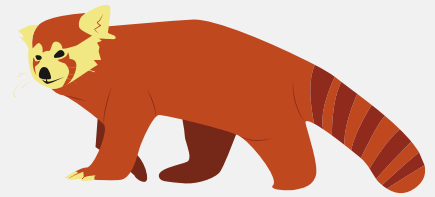
Make sure to submit your exotic companion to the NTS email, and you might catch them in the next issue!



MAY EXOTIC CREATURE FEATURE: RED PANDA (AILURUS FULGENS)

BY DREW CADWELL

Although many of us might have heard of the red panda, how much do we really know about these special animals? For example, you probably didn't know they are the only remaining member of their taxonomical family Ailuridae. Although there had been speculation that these animals are closely related to bears, more recent genetic analysis has shown this not to be the case. Previously, scientists had also classified them in the same family as raccoons due to morphological similarities between the two species' heads and colored ringed tails. However, further genetic exploration has also shown that the neighborhood trash pandas we are so familiar with are also a slightly more distant relative to red pandas than previously believed. Described as being slightly larger than a domestic cat with a bear-like body, they have puzzled taxonomists for decades. Although their ancestry remains somewhat uncertain, it is now understood that amongst living species, they are most closely related to raccoons, skunks, and weasels. Unfortunately, we can be certain that they are as endangered as they are adorable, and these furry friends are certainly deserving of our conservation efforts.



The biggest threat to these animals' existence in the wild is an all too common one. Due to deforestation trends resulting in habitat loss, nesting sites and the red panda's sources of food are being eliminated. Habitat loss has also led to increased habitat fragmentation resulting in smaller less genetically viable subpopulations of red pandas. In the wild, they are found living throughout forests in the chilly Himalayan Mountains, at altitudes between 5,000 and 15,000 feet. It is estimated that less than 10,000 individuals remain and the species is listed as endangered. Since red pandas are an arboreal species spending most of their lives in trees, it makes preserving these forests so vital for their survival. Although red pandas are technically omnivores, they prefer to feed on bamboo leaves and shoots and their diet relies heavily upon them. In fact, they eat around 30% of their body weight in bamboo leaves and shoots daily and spend around 13 hours out of their day either looking for or eating food. However, they also eat berries, blossoms, other plant leaves, and occasionally bird eggs, insects, and small rodents.

As far as conservation efforts, the WWF is currently focusing its efforts in Nepal which comprises 38 percent of their natural habitat. They are working with yak herders and other community groups to reduce human impact on the red panda's habitat. In addition to anti-poaching measures, they are also teaching local populations how to make yak dung briquettes which can be used for fuel instead of wood. The organization is also creating tourism packages as an alternative method for generating income for local populations.

CORAL REEF BLEACHING AND WHAT YOU SHOULD KNOW

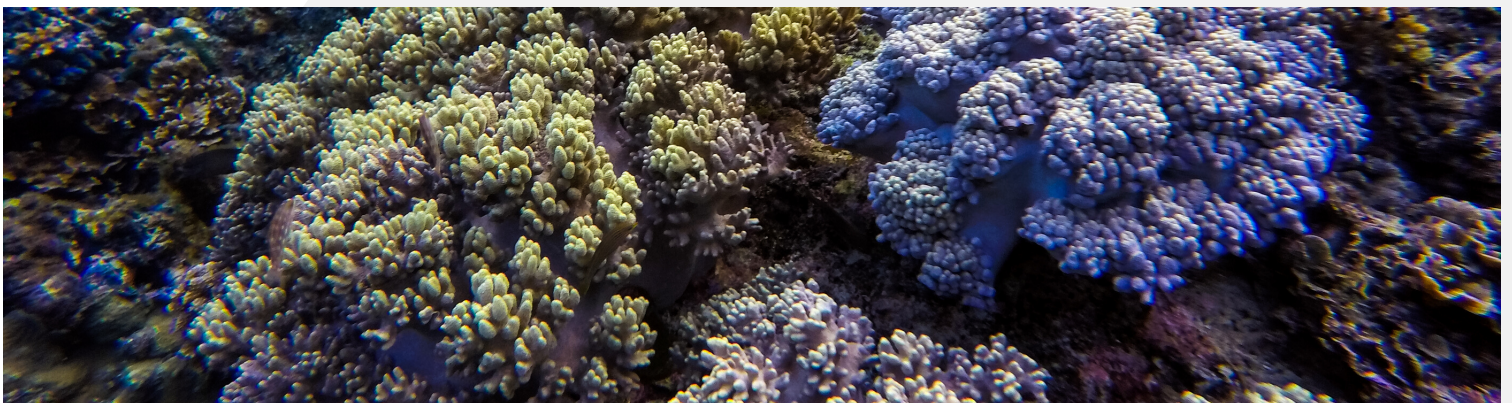
BY COLLEEN ELZINGA

What is it? Normally, the translucent coral polyps display colorful hues due to the symbiotic algae that the reefs host. When stressed, the coral can expel the algae and become completely white. If a coral bleaches, it is not necessarily dead. It is possible for corals to survive a bleaching event, but afterward they are under more stress and are susceptible to mortality. Consequences of a coral bleaching event include reduced growth rates, decreased reproductive capacity, and increased susceptibility to disease, which contribute to the elevated mortality rates.



What causes it? One significant cause of coral bleaching is warmer water temperatures. If the water gets too warm, corals will expel the algae (zooxanthellae) living in their tissues. Thermal stress is an increasing issue that has gotten worse in recent years and led to significant massive bleaching events. Additionally, cold temperatures can lead to coral bleaching and subsequent death. There is ongoing evaluation on the effects of cold stress to find out if it makes corals more susceptible to disease in the same way that warmer waters impact corals.

Why should I care? Coral bleaching and associated mortality has negative impact on coral communities, fish communities, and human populations. Coral reefs support about 25 percent of all marine creatures. Fish and invertebrates depend on live coral for food, shelter, or habitat. Declines in genetic and species diversity may occur when corals die as a result of bleaching. Bleaching events can also drive large shifts in fish communities that can reduce catches for human fishers targeting those species. This impacts the food supply and its related economic activities. Coral reefs help protect shorelines from currents, waves, and storms. They can absorb 97 percent of a wave's energy, helping to prevent loss of life and property damage. Coastlines protected by coral reefs are more stable. Additionally, coral reefs are used as a valuable source of pharmaceutical compounds. A larger amount of damaged reefs can reduce the ability to sustain important medicinal resources. Therefore, threats such as climate change and global warming can contribute to coral bleaching events and subsequently have detrimental effects on ecosystem health.



ENGAGING YOUR LIZARD BRAIN

BY BROOKE DUGAN



If there's one thing that staying at home has taught me it's that a static environment without stimuli is boring. I've noticed an increase in lethargy, stress snacking, and an unwillingness to engage in necessary tasks. Like studying. Despite being kept in a smaller, less engaging environment, there are still ways to provide enrichment to encourage normal behaviors, like actually moving more than just from my bed to my couch, Zoom calls to socialize, and games to make me actually think and problem solve. While I don't actually have a lizard brain and finding ways to get me to engage with the world shouldn't actually that difficult, finding ways to provide enrichment and improve welfare for actual lizards and other reptiles may not be as straight forward. Research into the effects of environmental enrichment in reptiles isn't easy to come by, but there's a growing demand for studies as we push for increasing animal welfare and encouraging natural behaviors.

One of the studies I looked at this week focused on leopard gecko welfare and their response to different types of enrichment. Two different enrichment objects were provided in different sessions over the course of the study from one of 5 different categories of enrichment: feeding, thermal, olfactory, object, and visual. The results showed that the geckoes spent a significant amount of time engaging with the items in each category, especially those that motivated the gecko to engage in hunting behaviors and thermoregulation.

Another article looked into olfactory enrichment specifically and found that Catalan wall lizards spent more time engaging in normal perching behaviors, habituated to novel environments quicker, and spent less time trying to escape. Rat snakes and Eastern water skinks living in more complex environments performed better on cognitive tasks. Eastern box turtles kept in enriched enclosures had a significantly lower heterophil to lymphocyte ratio and spent less time exhibiting escape behaviors than others kept on flat newspaper substrate.

What does all this mean for you and your lizard? Providing different forms of enrichment can improve welfare, encouraging natural behaviors for the species, such as burrowing, basking, and hunting, and decreasing unwanted escape behaviors. So while we're all holed up and trying our best to find our way to navigate this new normal, we can also take a minute to learn how to provide more enriching habitats for our reptiles.

Journals:

Does enrichment improve reptile welfare? Leopard geckos (*Eublepharis macularius*) respond to five types of environmental enrichment

Chemosensory enrichment as a simple and effective way to improve the welfare of captive lizards

The physiological and behavioural impacts of and preference for an enriched environment in the eastern box turtle (*Terrapene carolina carolina*)

WHAT'S GOING ON WITH RABBIT HEMORRHAGIC DISEASE VIRUS 2 IN THE UNITED STATES?

BY KYLIE AYERS

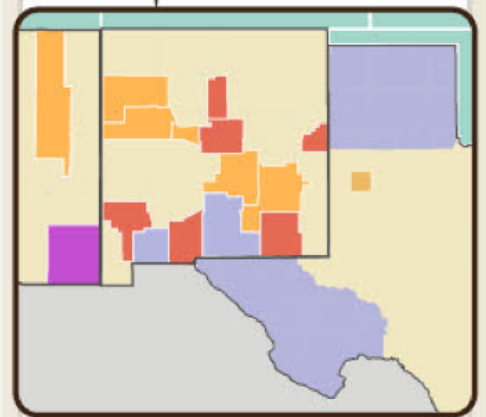
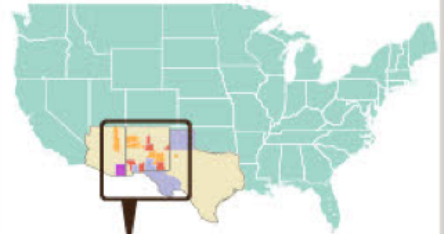
RHDV2 is a calicivirus that causes necrotizing hepatitis and sudden death in wild and domestic rabbits. It is considered a foreign animal disease in the United States, with only a few sporadic cases identified up until this point. It is one of three viral subtypes of RHD. RHDV2 was first identified in France in 2010 and has since spread to other European countries, Australia, and the United States. It is highly infectious, stable in the environment, and can be spread via fomites, inhalation, fecal-oral route, and direct contact with other rabbits.

Since the beginning of 2020, several outbreaks have been reported in domestic and wild rabbits in Washington, New York, and the southwest US, including Arizona, New Mexico, Texas, and Colorado. In multiple cases, large-scale die-offs have been reported. Domestic rabbits that did not die suddenly presented for a variety of non-specific signs, including: anorexia, depression, and listlessness, progressing to signs of organ failure.

Thankfully, RHDV2 is not zoonotic. However, the potential economic impacts of this disease on the commercial rabbit industry could be devastating should it continue to spread. Many rabbit owners are concerned for their pets as well. As a result, state veterinarians across the country are working to get access to a RHDV2 vaccine. Because RHDV2 is a foreign animal disease, vaccines are not widely available in the US at this point, though rabbits are routinely vaccinated in other countries where the virus is endemic. The future of a RHDV2 vaccine becoming commercially available in the US is uncertain at the moment.

RHDV2 and wild rabbit die-offs in the Southwest

Rabbit hemorrhagic disease virus 2 has been identified in New Mexico, eastern Arizona and western Texas.



- Domestic rabbits tested positive for RHDV2
- Wild rabbit die-offs reported
- Domestic rabbits tested positive for RHDV2 and wild rabbit die-offs reported
- RHDV2 confirmed as cause of death in wild rabbits

As of April 10, RHDV2 had been identified in domestic rabbits in 11 of 33 New Mexico counties, with wild-rabbit die-offs reported in eight counties. Note that wild rabbits were tested, and found positive, for RHDV2 only in Dona Ana and Curry counties.

Domestic rabbits have tested positive for RHDV2 in Navajo County, Arizona, and Hockley County, Texas. Wild rabbits also were confirmed to have died of RHDV2 in Cochise County, Arizona.

Sources: Arizona and New Mexico Game and Fish departments, New Mexico Livestock Board, Texas Animal Health Commission
Design by Tamara Rees
Base maps: Adobestock/Iryna Volina/brichuas

Stay up to date on all things RHVD2 by regularly checking in with VIN, AEMV, OIE, and the USDA.

HIGHLIGHTING THE RECENT SUCCESSES OF REPRODUCTIVE PROGRAMS IN AZA INSTITUTIONS

BY KENNYMAC DURANTE

Zoological institutions accredited by the Association of Zoos & Aquariums (AZA) help conserve and protect endangered species in multiple ways. One extremely impactful way of conserving species is through Species Survival Plans (SSP's). SSP programs are directed by expert advisors (biologists, curators, veterinarians, etc.) who cooperatively work with other AZA institutions in order to maximize genetic diversity, manage the demographic distribution of species in North American zoos, and ultimately achieve the long-term survival of threatened/endangered species.

There have been A LOT of amazing success stories over the last few months in regards to SSP's and although I'd love to share all of them, a few will be highlighted here! Not only are some incredible methods used to help conserve species but hopefully these stories (and their CUTE photos) serve as some #finalsmotivation! Good luck on finals everyone, have a safe and wonderful summer, and I hope you truly enjoy this article piece!

1. On Tuesday, April 21st, 5 critically endangered American red wolves (*Canis rufus*) were born as part of the North Carolina Zoo's red wolf breeding program! This is certainly no small feat as this particular species is the most endangered canid in the entire world with only 15-20 wild red wolves remaining only in eastern North Carolina. The red wolf once ranged throughout the entire southeastern U.S., from the Atlantic and Gulf Coasts and as far north as northern Pennsylvania. Due to extreme habitat loss and intensive predator control programs however, the red wolf population has been decimated. With such an critically endangered species, the birth of these 5 pups is a **HUGE** success with the conservation of the red wolf!



2. Two fishing cats (*Prionailurus viverrinus*) were born in early April as well! These two kittens were born at the Greensboro Science Center in Greensboro, North Carolina. This species of cat is absolutely extraordinary in more than one way. Unlike most species of cat, fishing cats are specially built for the water and are fantastic swimmers. A unique adaptation is that their front digits are partially webbed making it easier for them to swim and tread in muddy wetlands. Additionally, fishing cats have a very dense and compact layer of fur right against their skin, which ultimately prevents water from ever reaching the cat's skin allowing it to remain warm even in cold waters. Last but not least, you may notice that their head appears a bit more elongated (it's much more apparent in adults). That's certainly no mistake as even the morphology of their head is built around their semi-aquatic lifestyle so that they are better adapted for diving! All perfect adaptations for hunting in and around the water! The IUCN Red List of Threatened Species classifies the fishing cat as a vulnerable species with its wild populations currently decreasing. They are native to southern Asia however not much is known about their natural range. Parts of their range are protected in countries such as India, Sri Lanka, Bangladesh, and Vietnam.

3. Okay buckle up because this last one is not only an incredible breakthrough in science itself but an invaluable new tool for the conservation of species. On February 19th, two cheetah cubs were born at the Columbus Zoo and Aquarium. Although this is already a special event in itself, what makes this event so remarkable is that these cubs were born via embryo transfer produced by in vitro fertilization (IVF) by a surrogate mother for the very first time. This feat couldn't be done with just one zoo however as this procedure was also in collaboration with the Smithsonian Conservation Biology Institute and the Fossil Rim Wildlife Center. Okay but WHY even go to the lengths of having to utilize IVF in cheetahs..? Well there are a few reasons. One critically important reason is that about a third of cheetahs in zoos aren't able to or recommended by the SSP to breed due to age, health, genetic over-representation, behavior or other potential limiting factors. Another reason is that cheetahs naturally have poor genetic diversity (due to a near extinction of the species at the end of the ice age but that's for another time). Finally, cheetahs are listed as a vulnerable species by the IUCN with approximately 7,500 individuals remaining in the wild due to detrimental factors such as habitat destruction, human-animal conflicts and illegal hunting. SO I think it's safe to say that the cheetah sure has a lot to combat when it comes to conserving this species.

Okay so how was this procedure even accomplished? Very meticulously (it is dealing with cheetahs after all) and very carefully. So this is how it basically took place (Disclaimer: I am not an expert with IVF or Cheetah reproduction, so please consider this the "spark notes" version of this procedure!) First, semen was collected from a male cheetah at Fossil



Rim Wildlife Center and frozen for future use. Then, eggs were collected from Kibibi, a genetically valuable female at the Columbus Zoo. Scientists then performed in vitro fertilization in a lab using the semen collected from the male cheetah from Fossil Rim and Kibibi's eggs. The eggs became successfully fertilized resulting in embryos. These fertilized embryos were then harvested and transferred to the oviduct of the chosen surrogate cheetah, Izzy. How did they choose Izzy exactly? Well she is technically less valuable from a genetic standpoint so based on the SSP, she was not recommended to breed. However, she has had valuable experience raising cubs successfully and is quite accustomed to and comfortable with her keepers, which ultimately made her the best surrogate choice! With the embryos implanted, it then became a waiting game to see if it would become a success. We know however that a typical gestation period for a cheetah is 93 days, so with that information, the veterinary staff at the Columbus Zoo could anticipate when to start checking for pregnancy. Then in December 2019, Izzy was confirmed pregnant via ultrasound and in February 2020, her care takers started 24/7 birth watch.

Finally, On February 19th 2020, two cubs were born resulting in the first successful IVF procedure in cheetahs! This reproductive success is truly invaluable to the conservation of cheetahs as it proves that zoos can potentially build a more robust and genetically healthy populations of cheetahs in human care!



Running out of supplies for your exotic pet? Here's what's open during COVID-19

BY: EMILY GREZDA

COVID-19 has undoubtedly changed our daily lives; has it changed how you've been able to get your exotic pet's food? If you're in town, Sailfin Pet Shop in Champaign is still open! Most pet stores are still considered essential because our pets still need to eat.

However, some exotics are more difficult to find supplies for, so here are some places that you can still order from.

Reptiles: Cold Blooded Café has the BEST frozen rodents on the market, for \$30 flat rate shipping across the US. A LOT of bags rodents can fit into one box; you can easily split one with friends. If you are still in the area, I can also deliver them with no shipping cost. They are located in Indianapolis if you are closer to there and want to avoid shipping as well. Contact me for any CBC questions or inquiry about delivery.

Avian Species: Check out last newsletter for the Lefaber discount! Contact Kylie with any questions.

Exotic Mammals: Mazuri.com is consistently a great diet source for a variety of exotics. If you have not visited their site, I highly recommend it; shipping is not too expensive and these diets are formulated specifically for each species.



Test Your Trivia Knowledge!

BY: RYAN PATTERSON

Answers on last page!!!!

1. Which of these is not a way to differentiate true seals from sea lions?

- a. Sea lions have external ear flaps, which seals lack.
- b. Sea lions' hind flippers allow them to be able to walk on land.
- c. Seals are able to slow their heart rate for deep dives, while sea lions cannot.
- d. Seals have longer claws on their front flippers.

2. Which is a unique defense mechanism of New World Tarantula's?

- a. Biting
- b. Urticating hairs
- c. Running away
- d. Burrowing

3. About how old are chimpanzees when they usually begin weaning?

- a. 5 years
- b. 2 years
- c. 6 months
- d. 3 years

4. Which bone is not usually pneumatic bones in birds?

- a. Humerus
- b. Coracoid
- c. Pelvic bones
- d. Tibia

5. How many species of sea turtle are there?

- a. 5
- b. 6
- c. 7
- d. 8

NTS Word Search

T Y S I O N I L L I L X M H M Y C B
 V I E N E L I T P E R Z E E R O R S
 E H U S B A N D R Y O A T E N E A I
 T E L N A I P E F O L S G S E R N N
 E N R S L N N B L T Y R E D Q H E L
 R P E T C I U O H S U R I N T I S C
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 O V O R P E I M M I K E I B L P O H
 D I G D T G I B N A N K S R D M T U
 E D A S M I A E I O L C H A L O U I
 N A N A T O M Y W A V O O T I C C H
 T R T T A T I B A H N P R E W M N D

Word List:

AMPHIBIAN
 BREEDING
 ECOSYSTEM
 HUSBANDRY
 MARINE
 ONE
 REPTILE
 TECHNICIAN

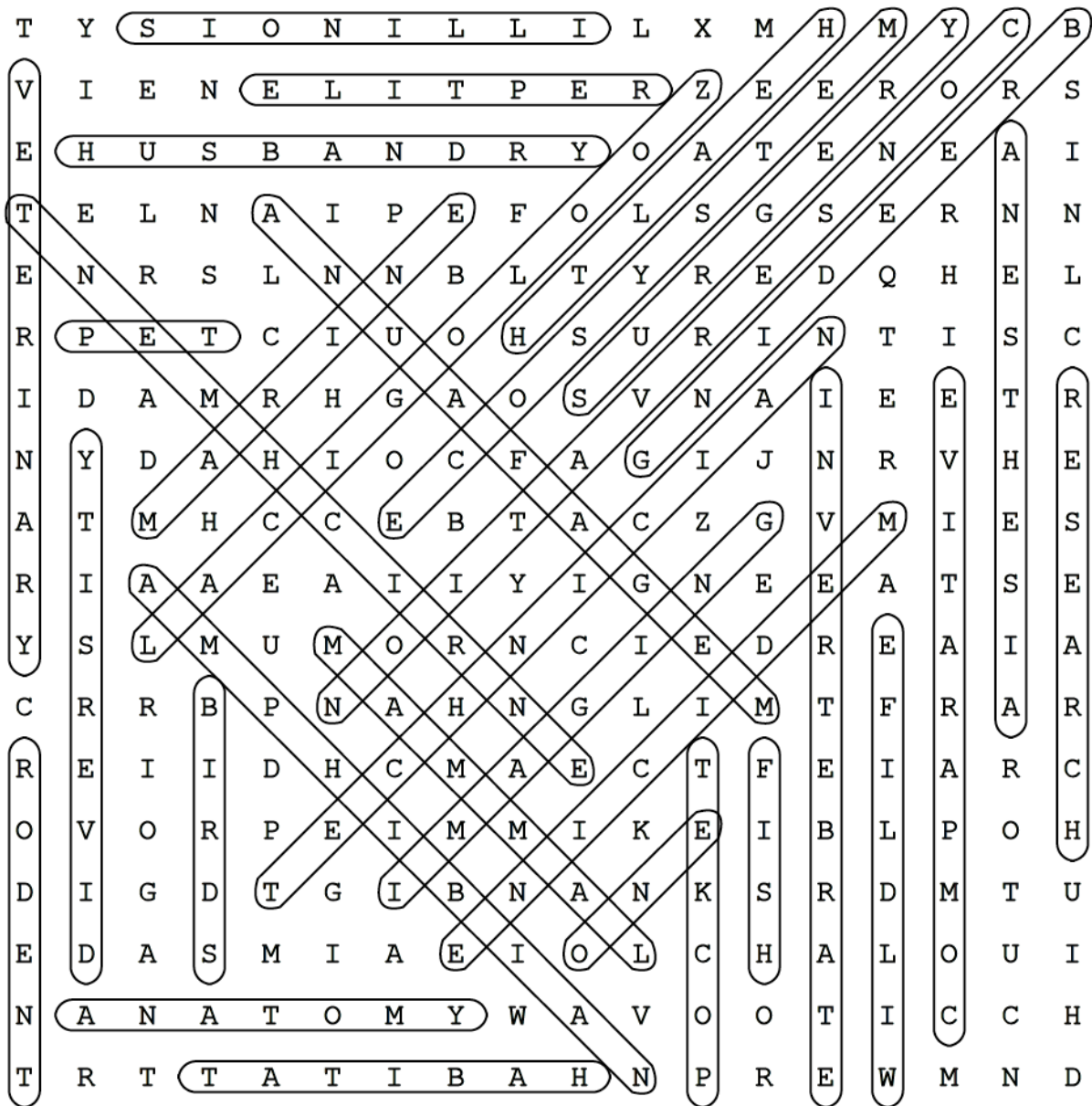
ANATOMY
 COMPARATIVE
 ENRICHMENT
 ILLINOIS
 MAMMAL
 HEALTH
 RESEARCH
 VETERINARY

ANESTHESIA
 CONSERVATION
 FISH
 IMAGING
 MEDICINE
 POCKET
 RODENT
 WILDLIFE

BIRDS
 DIVERSITY
 HABITAT
 INVERTEBRATE
 MEGAFUNA
 PET
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Answers on the last page!

Wordsearch Answers



Trivia Answers

1. Which of these is not a way to differentiate true seals from sea lions?

- a. Sea lions have external ear flaps, which seals lack.
- b. Sea lions' hind flippers allow them to be able to walk on land.
- c. Seals are able to slow their heart rate for deep dives, while sea lions cannot.**
- d. Seals have longer claws on their front flippers.

2. Which is a unique defense mechanism of New World Tarantula's?

- a. Biting
- b. Urticating hairs**
- c. Running away
- d. Burrowing

3. About how old are chimpanzees when they usually begin weaning?

- a. 5 years**
- b. 2 years
- c. 6 months
- d. 3 years

4. Which bone is not usually pneumatic bones in birds?

- a. Humerus
- b. Coracoid
- c. Pelvic bones
- d. Tibia**

5. How many species of sea turtle are there?

- a. 5
- b. 6
- c. 7**
- d. 8

Sources Used For Newsletter

Dr. Jill Arnold of ZooQuatic Laboratory LLC

Canva

<https://www.nationalgeographic.com/animals/invertebrates/group/corals/>

<https://coast.noaa.gov/states/fast-facts/coral-reefs.html>

https://oceanservice.noaa.gov/facts/coral_bleach.html

<https://reefresilience.org/stressors/bleaching/bleaching-impacts/>

https://myemail.constantcontact.com/Rabbit-Hemorrhagic-Disease-Virus-2-Resurgence.html?soid=1118123317436&aid=0cw9V_n_IFk

<https://www.azgfd.com/rabbit-hemorrhagic-disease-confirmed-in-arizona/>

<https://aemv.org/wp-content/uploads/2020/04/WHB-2020-04-RHDV2.pdf>

https://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Disease_cards/RHD.pdf

<https://news.vin.com/default.aspx?>

[pid=210&ld=9597414#update](https://news.vin.com/default.aspx?pid=210&ld=9597414#update) https://www.askjpc.org/vspo/show_page.php?id=US85Zy9HQ3ZHY3huTHBVSIHN1FTdz09

<https://rabbit.org/rhdv/>

North Carolina Zoo Twitter

<https://nationalzoo.si.edu/news/first-cheetah-cubs-born-result-embryo-transfer>

<https://www.iucnredlist.org/species/18150/50662615>

<https://animals.sandiegozoo.org/animals/fishing-cat>

<https://www.fws.gov/southeast/wildlife/mammals/red-wolf/>