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SALAD WITH A SIDE OF CHICKEN

BY BROOKE DUGAN

Large tortoises are known for their gentle, herbivorous nature. However, a video of a Seychelles giant tortoise pursuing and attacking a tern chick has been the subject of multiple articles from the Smithsonian, to Wired, and everything in between. Current Biology published the original article on August 23rd, written by Anna Zora, the conservation manager of Frégate Island Sanctuary, and Justin Gerlach, a researcher with the University of Cambridge. While tortoises and other herbivores have been documented eating live prey before, it's the first time any species of tortoise has been caught on film actively hunting.

Giant tortoises in the Galápagos and Seychelles islands have vital ecological roles and are keystone species. They are important players in seed dispersion, breaking down vegetation, and rock erosion. The population Zora and Gerlach observed inhabit Frégate, a privately owned island in the Seychelles islands. The tortoises on Frégate are descendants of introduced captive individuals from the 1950s and their wild counterparts. After habitat restoration, the local seabird population grew extensively, with a dense population of tortoises in a nearby woodland area.

The viral footage of a female tortoise eating a tern chick came from a July 2020 census of the seabird population. In it, the tortoise is recorded walking directly toward the chick with her mouth wide open, which is a known aggressive behavior in tortoises. The tortoise made several attempts to bite while the chick tried to hop away down a fallen log. For 7 minutes, the tortoise pursued the chick, ending with the tortoise biting the chick over the head and eventually swallowing it whole.

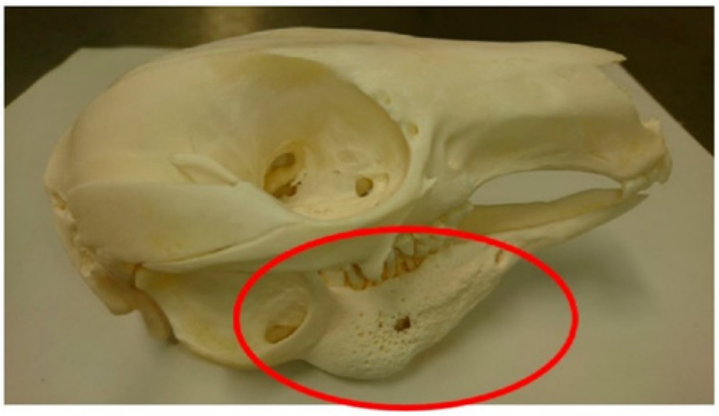
Historically, Frégate tortoises have been observed eating and even hunting birds, but this was the first time it was caught on video. Based on the tortoise's behavior and direct approach to hunting, Gerlach and Zora believe that this isn't the first time this individual has hunted. Researchers don't know how prevalent this behavior is in the Frégate tortoise population, but they so far seem to agree that predation by lizards and crabs is much more likely to have any kind of effect on the tern population. For now, future studies are needed to determine just how common predatory behavior is in Seychelles giant tortoises, how and if it will affect the local tern populations, and what it means for tortoise behavior overall.

MACROPOD DENTAL DISEASE

BY RACHEL ANGLES

Overview: In the field of zoo medicine, one of the most common issues seen with macropod species (kangaroos and wallabies) is the incidence of dental disease. This is better referred to as Macropod Progressive Periodontal Disease (MPPD), or "lumpy jaw". MPPD has high morbidity and mortality rates in zoological institutions worldwide in both kangaroos and wallabies. This results in proliferative osteomyelitis of the mandible and/or maxilla.

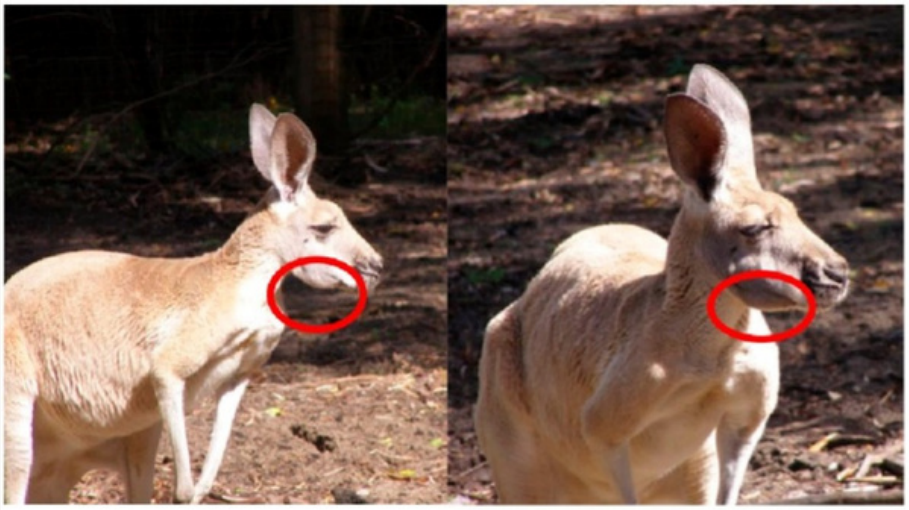
Cause: MPPD is bacterial in origin and can be caused by many different pathogens, but *Fusobacterium necrophorum* is the most common. Other isolates include *Pseudomonas spp.*, *Streptococcus spp.*, *Actinomyces spp.*, and *Bacteroides spp.*



Diagnosis: Visual observation of osteolytic change is used to diagnose MPPD, whether that be through examination of the oral cavity or radiographic techniques. Bacterial culturing can also be taken to confirm a diagnosis.

Risk Factors: Molar progression is believed to be a risk factor in MPPD – the sooner molars come in as the macropod ages, the more risk of exposure there is as the teeth are worn down. Stress and subsequent immunosuppression are also considered risk factors, which can come from competition within the group, environmental conditions, or transport between zoos. Additionally, exposure to soft, low fiber, high sugar artificial diets was shown to increase the incidence of MPPD.

Treatment: Even with treatment, ~62% of cases end in death. MPPD is often treated with aminoglycosides (typically amikacin and gentamycin) and penicillin G, but an antibiotic sensitivity can be run on the bacterial culture to determine what will work best. Regular flushing of oral wounds with betadine solution also helps to keep the infection under control.



ECHIDNAS: AUSTRALIA'S ECOSYSTEM MANAGEMENT

BY CARLY CLARK

Found prevalently throughout Australia and New Guinea, these spiny critters called echidnas are part of the mammalian order Monotremes (along with the platypus). This group of animals has evolved highly specialized anatomy that set them apart from their placental mammal and marsupial cousins. Like all mammals, echidnas have hair and produce milk for their young. However, the similarities basically end there. The most notable of these is their reproductive strategy: egg-laying!

Echidna mothers will lay one single egg into a stomach pouch. These eggs usually hatch within about 10 days of being laid, producing young adorably termed "puggles". Mother echidnas also nurse their young, even though they lack nipples. Instead, milk rich in monotreme lactation protein, an antimicrobial to bolster the young's immune system, is emitted from pores in the skin of mammary tissue.

As adults, echidna anatomy is extremely well adapted to their diet which consists primarily of termites (up to 40,000 per day!). They lack teeth and instead have a highly modified snout with an electro-sensory organ at the distal end for sensing the electric impulses of insects nearby. It then uses its barbed and sticky tongue to scoop up prey, much in the same manner as an anteater.

Why are echidnas important?

Their highly reinforced shoulder girdles, short strong legs, and large claws make echidnas perfectly adapted for digging. They play an important role in the Australian forests and shrublands acting as eco-engineers. These 10lb digging machines waddle all around Australia turning over the soil in search of prey and in making burrows, improving soil health, encouraging plant growth, and decreasing run-off an erosion. Unlike many digging species, echidnas are not currently under threat and are playing an increasingly crucial part of keeping the Australian ecosystem running smoothly.

Echidna Fun Facts

- Lack corpus callosum (the bridge between brain hemispheres
- Have 5 sex chromosomes
- Are amazing swimmers
- Have the 2nd lowest functioning body temperature of any mammal (~85F)
- Have vestigial spurs and lack functional venom glands
- Have a single cloacal opening

Test Your Trivia Knowledge!

BY RYAN PATTERSON

Which species of sea turtle is only found in the waters off of Australia, Indonesia, and Papua-New Guinea?

a.Olive Ridley
b.Hawksbill
c.Flatback
d.Leatherback

The word raccoon comes from the Algonquin word "aroughcon", which described which distinctive feature of the raccoon?

a.Hands
b.Eye markings
c.Tail
d.Snout

What is the fastest moving snake in the world, traveling up to about 18 mph?

a.Black mamba
b.Southern black racer
c.Cottonmouth
d.Sidewinder

About how many species of birds are there?

a.5000
b.7500
c.10000
d.15000

What is the approximate top sprinting speed of a gray wolf?

a.25-30 mph
b.35-40 mph
c.45-50 mph
d.55-60 mph

Answers: c, a, d, c, b

UV LIGHT AND REPTILES

BY EMILY GRZEDA

UVB lights are widely regarded as a necessity for reptile keeping in order to avoid metabolic bone disease (MBD). UVB is absorbed by the skin and allows the production of vitamin D3, which is what causes calcium to be synthesized. Without that D3, calcium gets resorbed from the animal's bones, lowering their density and leading to a variety of issues and malformations. Vitamin D3 can be supplemented in the diet, but those powders are not often digested efficiently and are therefore not an acceptable replacement. Additionally, D3 can be OVERdosed, while reptiles regulate themselves by controlling how long they decide to bask under their UV light in order to synthesize the exact amount of D3 they need. A study performed on panther chameleons (*Furcifer pardalisy*) showed that they regulated their UV basking both efficiently and precisely based on their needs (Karsten et al. 2009).

While UV light is invisible to humans, it IS visible to reptiles. When we look at a UV light, we see that it is on because visible light is also emitting. However, since we don't see the UV light, and UV burns out significantly more quickly than visible light, we have to replace them much more frequently than you might think. Companies typically advertise use for 8 months – 1 year, but a study showed that these bulbs actually only emitted any useable UV light for about 4 months at the longest (Hetényi & Hullár 2018). The only way to know for sure when you need to replace them is to invest in a UVB meter – a worthwhile investment. They are sold by both SolarMeter and Vivtech Products online, but not in pet stores. Some lights advertised as UV bulbs don't emit any at all, right out of the box, so it's worth it to know! There are now some LED UV bulbs on the market from VivTech Products that last for 4 years – by far the longest efficacy of any bulb. If you're an owner that wants to "set it and forget it," those are for you (they also emit UVA and have 6500K plant bulb diodes).

The “forgotten stepchild,” but equally important part of UV, is UVA. UVA light is the type of UV that reptiles can see, and there’s substantial evidence that shows that reptiles actually choose spots with higher UVA to decide where to bask – not just heat. Thermal regulation is a completely different process than UV sensing (by their parietal eye), and they treat them as such. Having a UV bulb on one end of the enclosure and a heat bulb on the other will cause your reptile to likely spend time in both locations, but out basking in both areas – not just hiding on that cooler side. UVA also regulates natural physiologic behaviors (such as climbing or burrowing, depending on species), finding food (as they can see the biofluorescence that insects and mammals emit, while again, we cannot), camouflage, reproductive and social behaviors, and serotonin production. When we walk outside and get a good feeling from the sun hitting our skin, that’s UVA at work. While these effects are not always as clinically relevant as veterinarians the same way as MBD is, they are certainly important for the animal’s wellbeing. It is also important to understand because if an animal is acting strangely or not eating properly, adding a UV source that includes UVA will often aid in their return to health and normalcy.

While reptiles are frequently considered easy pets and can be, they have more needs than sometimes the average pet owner realizes. UV lights are critical to both reptile health and wellbeing and fluorescent bulbs must often be replaced more frequently than companies advertise. Be sure to educate your clients and make recommendations accordingly – it can greatly increase the quality of life and longevity of these animals.

A note: I am an employee of VivTech Products, and I stand by them. However, I am not paid to advertise them, so these mentions and suggestions are of my own accord.

RISKS OF PARROT FOREIGN BODIES

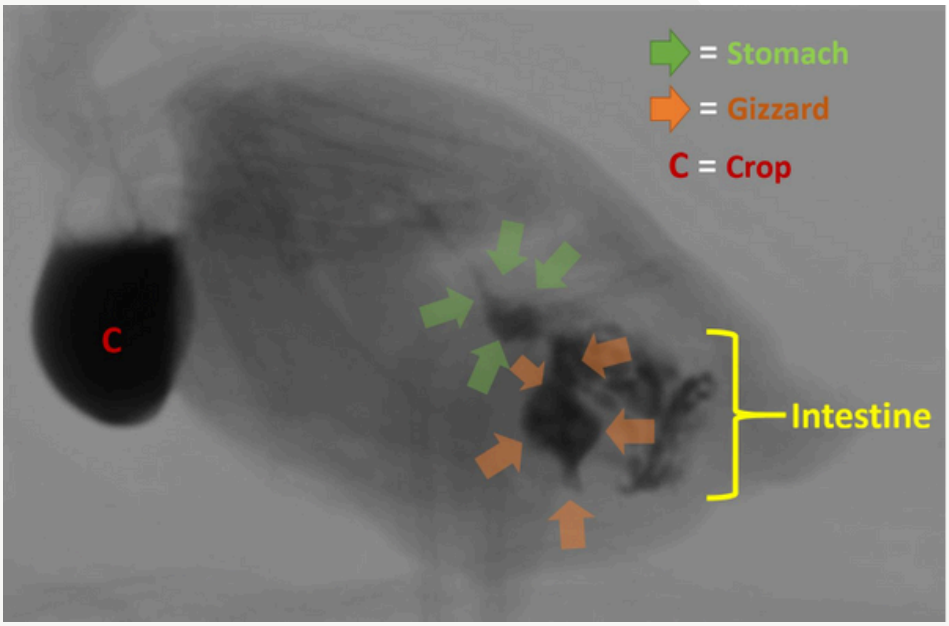
BY KAYLA LADEZ

Anyone who has owned or worked with a parrot knows they are amazing little bulldozers who can destroy unexpected objects in record time. Often destruction is the only goal, and most birds know better than to ingest foreign objects. Birds who do ingest foreign materials can be difficult to manage because they have never-ending opportunities for trouble in our homes.

Shiny things, like jewelry and rhinestones, are very attractive to birds causing them to be one of the most common forms of foreign bodies. Glasses, clothing, phone cases, purses, and home décor of all kinds are potential dangers if any bits of metal are removed by a bird. Besides damaging the GI tract, these materials are often toxic.

Even birds who don't intentionally eat material can be at risk of obstruction. Many sleeping huts and stuffed toys are made of synthetic polyester fibers that can be shed during normal manipulation by a bird. These fibers are so small they could be accidentally ingested and cause obstruction over time. These cases are especially difficult to catch early because owners often see no damage to the toy. Natural materials, such as cotton, cardboard, paper, wood, coconut husks, bamboo, palm leaves, dried corn husks, and banana leaves are safer alternatives because they are less likely to cause lower GI obstructions.

Clinical signs of foreign bodies in parrots are often nonspecific including lethargy, regurgitation or vomiting, weight loss, and changes in feces. Diagnosis is made by barium studies with radiographs or fluoroscope images, which allows visualization of GI movement in real-time. Bones and barium appear white on radiographs, but black on fluoroscope images. Treatment of foreign bodies in parrots ranges from medical management to removal by endoscope or abdominal surgery.

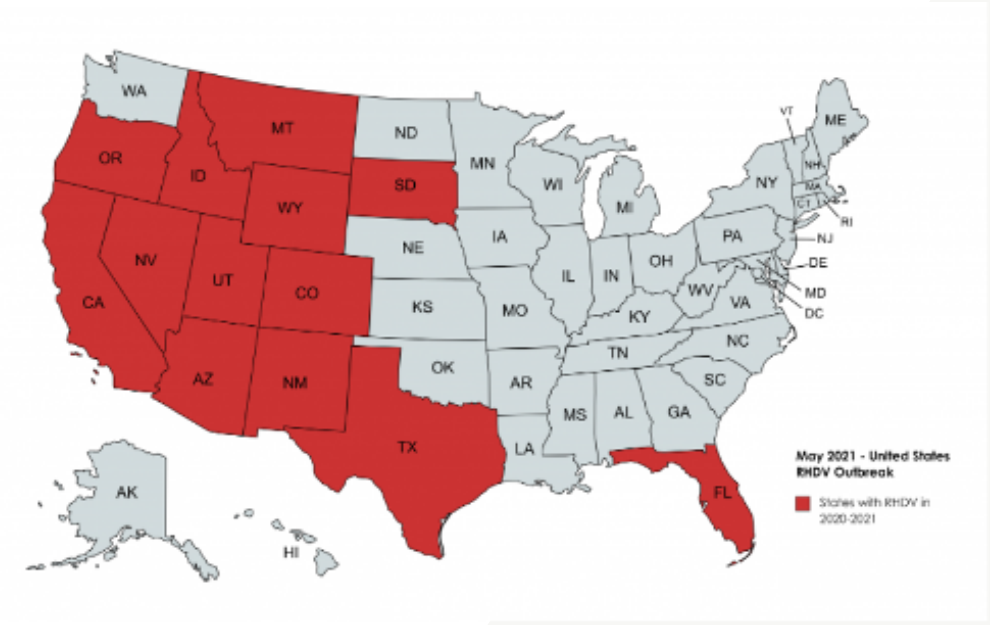


Visit the Association of Avian Veterinarians website at AAV.org to learn more!

IS RABBIT HEMORRHAGIC DISEASE VIRUS (RHDV) 2020'S SECOND PANDEMIC?

BY GABRIELLE DONNELLY

Until February 2020, Rabbit Hemorrhagic Disease Virus had a rare presence in the United States. In the past, there had been a few small outbreaks that were easily contained, but since this new serotype (RHDV2) was diagnosed in a domestic rabbit from New York City, case numbers have continued to grow with no end in sight.



Both domestic and wild rabbits are at risk of sudden death from this virus, as mortality can be up to 90% with no cure available. RHDV is a highly transmissible virus that was first discovered in China in 1984 and has since been recorded in over 40 countries throughout Europe, Asia, Africa, Australia, and New Zealand. Symptoms may not always be present, but include anorexia, lethargy, fever, seizures, jaundice, and difficulty breathing, The most obvious sign is bleeding from the nose, mouth, or rectum. Death ultimately results from necrotizing hepatitis, spleen necrosis, or hemorrhage.

The virus is incredibly resilient and can survive outside a host for up to 3.5 months at room temperature. This means it can also easily be transmitted on contaminated clothing, shoes, food, and of course rabbit excretions and blood. Even a recovered rabbit can shed the virus for 2 months post-recovery, so it is extremely important to keep any cases isolated from other rabbits.

While there is currently no approved vaccine available for RHDV in the United States, veterinarians may import vaccines from Europe. Eravac has proven effectiveness against RHDV2 and Filavac has proven effectiveness against RHDV1 and RHDV2. They are both killed vaccines which are safe options,

but the biggest concern now is if there is a supply large enough to curb this outbreak. Hopefully, the veterinary and public health communities can get these cases under control. Otherwise, rabbits might experience a pandemic of their own.

WILDLIFE UNIVERSITY - TAKE 2!

BY FAYTH KIM

This year marks the second year that Wildlife University will be held by the Non-traditional Species Club. The event is scheduled for September 25-26. Here are just some of the topics that will be covered in this comprehensive short-course: legalities of wildlife rehabilitation, bird/reptile anesthesia and analgesia, avian orthopedics, freshwater fish wildlife medicine and management, and toxins of concern in zoological medicine. In addition to fascinating lectures presented on both days, a wildlife trivia night will be held on day 1, and an in-person wet lab on clinical pathology will be led by Jennifer Trail on day 2. This wet-lab opportunity will feature hands-on instruction and guidance.

For professionals interested, Illinois state CE credit will be offered for this event.

Registration fees will be the same as last year (breakdown below):

	Early-bird (on or before 9/17)	Regular (after 9/17)	Wet Lab
UIUC Students	$35	$45	$20*
Non-Illinois Students	$45	$55	Not available
Professionals	$50	$60	Not available

*wet lab is ***only*** available for UIUC students who also register for the 2-day course

Take advantage of the early-bird discount and register at: https://vetmed.illinois.edu/education/continuing-education/wildlife-university/

Spaces for the wet lab are limited so do not delay!

Don't miss out on this great opportunity to learn more about the intricacies of wildlife medicine and interact with leading the field's leading professionals. If you have any questions or concerns, email uiucwildlifeuniversity@gmail.com.

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Sources and Acknowledgements

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