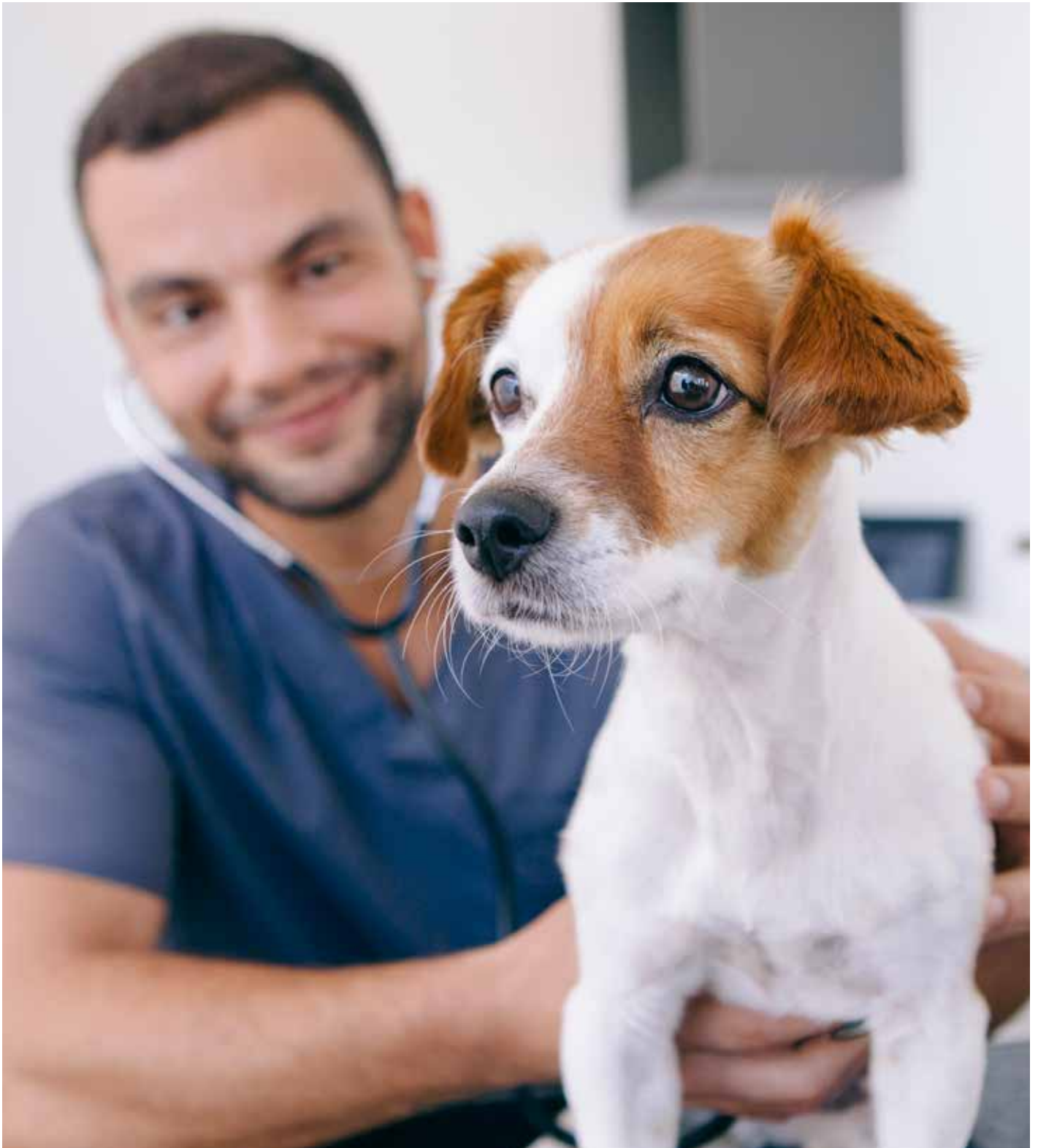


THE AUSTRALIAN VETERINARIAN MAGAZINE

Study confirms cats can become infected with and may transmit COVID-19 to other cats

Tree trunks take a licking as koalas source water

Why cats have more lives than dogs when it comes to snakebite



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WINTER PET CARE TIPS



VETERINARIAN DR SASHA NEFADOVA HAS COMPILED TIPS TO HELP KEEP PETS HAPPY AND HEALTHY THIS WINTER

1. Preventing the risk of hypothermia

Pets should have the option to come indoors in winter and not spend too much time outdoors in the cold. Some pets are more physically prepared for the colder weather than others, for example a Husky will fare better in the cold than a Yorkshire Terrier. Pet owners should use their common sense and look out for the tell-tale signs of discomfort, including shaking, barking and whining - which could all be signs that your pet is too cold. Rabbits and Guinea pigs living in animal hutches should be brought indoors or to a dry and secure location such as the garage or laundry.

2. Winter warming wardrobe

Despite the change in weather, our furry friends still require regular daily exercise to keep in shape. A warm winter jumper or coat can keep them cosy on their winter walks and keep them snug throughout the day. Visit your local pet store for advice and sizing information for optimum comfort.

3. Blizzard-proof bedding

Your pet may spend more time lying down during the winter months, because just like us, the cold weather tends to slow them down to conserve energy and keep warm. Invest in a thicker, warmer bed in winter to make sure your pet has somewhere

comfortable to lie down throughout the day and night. It's important your pet has 24-hour access to a comfortable bed to call their own, so they know where their safe space to reside is.

4. Winter conscious diet

Pets need a well-balanced diet and it's particularly vital to maintain a healthy weight for your pet over the cooler months. If your cat or dog is overweight, it can lead to severe health conditions such as heart disease, joint problems and arthritis, respiratory problems, diabetes, skin issues and even premature ageing.

Ensuring your pet has a nutritious diet and regular exercise are key factors in maintaining their healthy weight. While you may want to spoil your pet and give them extra treats while spending more time indoors, over-feeding could cause weight gain or other health-related issues. If you want to feed extra treats to your pet throughout the day, assess how much your feeding them and give them less food at mealtimes to balance out the treats.

5. Maintaining exercise in winter

Ensuring your pet has regular exercise is necessary to maintain their optimal physical health and mental wellbeing. In addition to the obvious benefits, regular exercise for your four-legged friend can assist in reducing digestive problems and constipation, as

well as build confidence in fearful dogs. Keeping your pet active and energised can also help reduce some common behavioural problems like anxiety, barking, digging and chewing.

6. Pet grooming in the cooler months

Untrimmed dogs, cats and rabbits with an extra-thick winter coat require regular grooming.

A winter coat can hide trouble, such as lumps, bumps or sores; which is another good reason to keep brushing regularly. It can also help identify and control fleas and ensure that your pet's coat does not become matted and uncomfortable. As you brush, feel and look carefully for signs of illness and check in with your local vet if you come across anything suspect.

Your pet will also love being affectionately fussed over when you groom them!

7. Winter health care

The colder it gets, the harder animals' bodies need to work to fend off illnesses as they are expending more energy trying to stay warm. If your pet has an underlying health condition, this is a particularly important time of year to go to the vets to get a regular health check-up.

Senior pets are particularly at risk, and the most common ailment we see in senior pets is arthritis. Older pets are more prone to having osteoarthritis in the joints and when the temperature drops these aches and pains can be much more painful than during other seasons.

During winter, the combination of a heated home and pets that are indoors often provides the ideal breeding environment for fleas. It's important to treat your pet all year round with a quality product such as Advantage or NexGard.

“Your pet may spend more time lying down during the winter months, because just like us, the cold weather tends to slow them down to conserve energy and keep warm.” Dr Sasha Nefadova

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WHY CATS HAVE MORE LIVES THAN DOGS WHEN IT COMES TO SNAKEBITE

Cats are twice as likely to survive a venomous snakebite than dogs, and the reasons behind this strange phenomenon have been revealed by University of Queensland research.

The research team, led by PhD student Christina Zdenek and Associate Professor Bryan Fry, compared the effects of snake venoms on the blood clotting agents in dogs and cats, hoping to help save the lives of our furry friends.

“Snakebite is a common occurrence for pet cats and dogs across the globe and can be fatal,” Dr Fry said.

“This is primarily due to a condition called ‘venom-induced consumptive coagulopathy’ - where an animal loses its ability to clot blood and sadly bleeds to death.

“In Australia, the eastern brown snake (*Pseudonaja textilis*) alone is responsible for an estimated 76 per cent of reported domestic pet snakebites each year.

“And while only 31 per cent of dogs survive being bitten by an eastern brown snake without antivenom, cats are twice as likely to survive - at 66 per cent.”

Cats also have a significantly higher survival rate if given antivenom treatment and, until now, the reasons behind this disparity were unknown.

Dr Fry and his team used a coagulation analyser to test the effects of eastern brown snake venom - as well as 10 additional venoms found around the world - on dog and cat plasma in the lab.

“All venoms acted faster on dog plasma than cat or human,” Mrs Zdenek said.

“This indicates that dogs would likely enter a state where blood clotting fails sooner and are therefore more vulnerable to these snake venoms.

“The spontaneous clotting time of the blood - even without venom - was dramatically faster in dogs than in cats.

“This suggests that the naturally faster clotting blood of dogs makes them more vulnerable to these types of snake venoms.

“And this is consistent with clinical records showing more rapid onset of symptoms and lethal effects in dogs than cats.”

Several behavioural differences between cats and dogs are also highly likely to increase the chances of dogs dying from venomous snake bite.

“Dogs typically investigate with their nose and mouth, which are highly vascularised areas, whereas cats often swat with their paws,” Dr Fry said.

“And dogs are usually more active than cats, which is not great after a bite has taken place because the best practice is to remain as still as possible to slow the spread of venom through the body.”

The researchers hope their insights can lead to a better awareness of the critically short period of time to get treatment for dogs envenomed by snakes.

“As dog lovers ourselves, this study strikes close to home but it also has global implications,” Dr Fry said.

“I’ve had two friends lose big dogs to snakebites, dying in less than ten minutes even though the eastern brown snakes responsible were not particularly large specimens.

“This underscores how devastatingly fast and fatal snake venom can be to dogs.”



Journal Reference:

Christina N. Zdenek, Joshua Llinas, James Dobson, Luke Allen, Nathan Dunstan, Leijiane F. Sousa, Ana M. Moura da Silva, Bryan G. Fry. Pets in peril: The relative susceptibility of cats and dogs to procoagulant snake venoms. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*, 2020; 108769 DOI: 10.1016/j.cbpc.2020.108769

TREE TRUNKS TAKE A LICKING AS KOALAS SOURCE WATER

Koalas are one of the world’s most charismatic animals. But there is a lot we still don’t know about them. For example, how do the marsupials access water in the treetops? Do they only absorb moisture from the gum leaves they eat? Or do they come down from the trees to drink from a waterhole? Until now, no one really knew.

A study published recently in *Ethology*, led by a researcher from The University of Sydney, has captured koala drinking behaviour in the wild for the first time. The paper describes how koalas drink by licking water running down smooth tree trunks during rain.

“For a long time, we thought koalas didn’t need to drink much at all because they gained the majority of the water they need to survive in the gum leaves they feed on,” said Dr Valentina Mella, in the School of Life and Environmental Sciences. “But now we have observed them licking water from tree trunks. This significantly alters our understanding of how koalas gain water in the wild. It is very exciting.”

Survival

Australia is currently suffering the longest dry period ever documented, with severe rainfall deficits and record maximum temperatures. Koalas experience severe heat-stress and mass mortality events in prolonged hot and dry conditions and they spend more time drinking from artificial water stations if rain is scarce.

Further research could investigate when and why koalas from different areas need access to free water - not contained in the leaves as moisture but available freely as liquid, such as rain, river water or puddles - and whether water supplementation is necessary for some populations.

“This type of drinking behaviour - licking tree trunks - relies on koalas being able to experience regular rainfall to access free water and indicates that they may suffer serious detrimental effects if lack of rain compromises their ability to access free water,” Dr Mella said.

“We know koalas use trees for all their main needs, including feeding, sheltering and resting. This study shows that koalas rely on trees also to access free water and highlights the importance of retaining trees for the conservation of the species.”

Koalas rarely drink water

Each day, wild koalas eat around 510 grams of fresh succulent eucalyptus leaves, and the water in the foliage they feed on is believed to contribute about three quarters of their water intake in both summer and winter.

Among their adaptations to the Australian climate, koalas also possess extraordinary urinary concentrating abilities and have restricted respiratory and cutaneous water loss compared to similar-sized mammals.

In captivity, koalas have been observed to drink water, but this behaviour has often been considered unusual and attributed to disease or to severe heat stress.

However, anecdotal reports suggest that koalas in the wild

drink from waterholes in summer when temperatures exceed 40 degrees Celsius.

Koalas have also been observed approaching humans to access free water (in bottles, gardens and swimming pools during drought and after fire. But this is considered an unusual occurrence.

Observing licking behaviour

For this study, Dr Mella collated observations of koalas drinking in the wild made by citizen scientists and independent ecologists between 2006 and 2019 at the You Yangs Regional Park in Victoria and the Liverpool Plains in NSW. Each observation was koala behaviour noticed by chance and reported to Dr Mella.

There were 44 observations of free ranging koalas licking water running down a tree trunk during or immediately after rain in the You Yangs Regional Park.

The other two observations of koala drinking behaviour were recorded between the towns of Gunnedah and Mullaaley, in the Liverpool Plains. One was an adult female, with a joey, who drank profusely and uninterrupted for 15 minutes. The other was an adult male who drank at a steady pace for 34 minutes.

“As koalas are nocturnal animals and observation of their behaviour rarely occurs during heavy rainfall, it is likely that their drinking behaviour has gone largely unnoticed and has therefore been underestimated in the past,” Dr Mella said. “Our observations probably only represent a minority of the drinking that normally takes place in trees during rainfall.”

Koalas were observed accessing water in trees by licking the wet surfaces of branches and tree trunks during rain across a range of weather conditions, even when free-standing water was available in dams.

“This suggests koalas were drinking not as a result of heat stress and that this behaviour is likely to represent how koalas naturally access water,” said Dr Mella.



Old female koala showing natural drinking behaviour after a rain event in the You Yang Regional Park, Victoria, Australia. Photo credit: Echidna Walkabout and Koala Clancy Foundation.

Journal References:

Valentina S. A. Mella, Caitlin Orr, Lachlan Hall, Sabrina Velasco, George Madani. An insight into natural koala drinking behaviour. *Ethology*, 2020; DOI: 10.1111/eth.13032

VETERINARIANS FOR CLIMATE ACTION: EXCUSES OF UNCERTAINTY AND THE DEFENCE OF IGNORANCE WON'T STOP CLIMATE CHANGE

BY DR JEANNET KESSELS, BVSC HONS, CHAIR, VETERINARIANS FOR CLIMATE ACTION

Australia has experienced the spectacular power of nature first-hand; immense, raw and relentless. With the loss of over a billion wildlife in those horrific fires, and half a million cattle perishing from floods and cold exposure in our tropical northern summer, climate change is devastatingly real.

Last November I was called by an owner who had found a little lost bird in his kitchen. I was expecting a budgie or a cockatiel, but no, this was a beautiful, tiny, exhausted black-faced monarch who belongs in the rainforest, not suburban Brisbane. A wild bird who should not be allowing a pat. That little bird, weighing 25 grams, had to fly 1000s of km from Papua New Guinea to NSW and back again, through high temperatures and around the smoke of bushfires.

I can understand a lost pet budgie, but not the disorientation of the black-faced monarch who belongs in the rainforest. The slow stress of the displacement of the invisible.

As veterinarians we understand the death of animals, a few every week. But how can we grasp the loss of a billion? It's incomprehensible, and I for one can never accept it.

I travelled from south-east Queensland through rural New South Wales in January and I saw the scorching of those raging infernos; the flames had taken everything. Where thick forest had once covered the ridges of the hills, I saw rows of sticks. The animals, the birds I love to watch, the little lizards, the sugar gliders who had all been quietly doing their own thing, working it out for themselves over millions of years, were gone.

We have needed time for sadness but must not allow the luxury of despair; through our distress must come a resolve for hope and action. We must determine to stop this tragedy from repeating itself, again and again, year after year, through cascading impacts and escalating feedback loops. We must focus, not backwards with blame, but forwards with vision.

It is only when we recognise urgency that we run. And it is when we feel immense pain that we sprint. Australia has eminent scientists who have been working relentlessly for decades on climate change, and they must point the direction in which to sprint.

Through positive feedback loops we must bring this crisis under control. In collaboration with diverse disciplines, from engineering and technology to agriculture and veterinary science, our ideas and innovations will come to life.

Veterinarians for Climate Action will support the government wherever it possibly can in phasing out fossil fuels. More and more nations are doing this and so must we.

We will measure and improve our sustainability, through Veterinarians for Climate Action's Climate Smart Program.

Veterinarians in government and from our scientific community can focus on reducing methane emissions and increasing soil carbon through improved agricultural practices.

Veterinarians can work in advocacy to preserve our rich biodiversity, supporting the strategic planting of the right trees to pump carbon while taking care of the koalas we all love, and the black-faced monarchs most of us haven't even heard of.

Each individual, workplace and sector must come together to do its part; working alongside, supporting our leaders in moving forwards in a strong, effective and resolute manner, so that we can look back with pride that we did our best, from 2020.

With the inconsolable loss of a billion animals, which we refuse to accept as the new norm, the momentum is building. Please join Veterinarians for Climate Action (A Voice for all Animals) www.vfca.org.au

About the Author

Jeannet owns Greater Springfield Veterinary Hospital in Qld and is responding with conviction and commitment to the horror of climate change affecting our animals and the environment.

About Veterinarians for Climate Action

We inspire the veterinary profession to advocate and achieve climate action within and beyond our industry, benefiting both our profession and the animals we care for, ensuring a sustainable future for all. If you would like to join or donate please visit www.vfca.org.au/home/join-or-donate

Under business as usual CO₂ emissions scenarios, wildlife extinction rates of between 16% to 89% have been predicted

Because animals matter!

Veterinarians for Climate Action



Lean, keen and starting to be seen... All-Australian Animal Health Co. makes its mark

He may not be able to leap tall buildings in a single bound, but just like a DC superhero, Mick Findlay possesses dual identities... he's both Farmer AND Pharma! And his superpower seems to be an ability to both listen to the requirements of Australian Vets and deliver what they need.



On one hand he's a mild-mannered man of the land managing 10,000 acres in the beautiful Snowy Monaro region of NSW. He runs a self-replacing flock of up to 8,000 Merinos, while his wife looks after more than 20 horses.

When he's not on the land, he's up in Sydney working as Founder and Director of fast-growing business, Abbey Animal Health. Overall, Mick's had some 30 years' experience in this field, working with multi-national companies both here and overseas. He founded PharmTech in the '90s and was also a co-owner of Bomac, (later sold to Bayer). Just six years ago he launched Abbey Animal Health - an independent company fast building a reputation for possessing a 'can do' attitude and providing only the highest quality products.

Mick's goal is simple. He wants Abbey to become the leading Australian owned and managed, locally based supplier of animal health products to Vets, farmers, pet and horse lovers, right across the country. And he's definitely heading in the right direction.



We recently interviewed Mick for The Australian Veterinarian Magazine...

Q. So Mick, can you give us an example of Abbey's growing 'can do' reputation?

A. "Absolutely... we've developed really good relationships with our veterinary customers in particular. Essentially, it boils down to the fact that the person a vet talks to at Abbey can make decisions that help answer their problems. They ask and we deliver.

"A classic recent example is when we were approached by the small number of consultant vets who service the Australian Pork industry. They were keen for a water soluble formulation that could be effective in the treatment of inflammation in pigs – something that would ease their pain during fevers caused by viral or bacterial infections.

"No such product for food producing animals had ever been registered in Australia. And it's not something in which the big multi-national companies would have invested, given the small size of Australia's consultant vet market in this industry. But because we're a lean, nimble and energetic company that wants to build relationships with vets, we invested the time and money necessary to undertake all the R & D work... and we were able to register the product ANIBEX™.

"It perfectly meets the needs of the vets who approached us. And while it's not a product that's going to make us millionaires, it's doing really nicely... and there are now a lot of very happy pigs out there. We listened to our customers and we responded... and that's a point of difference of which we're rightfully proud."

Q. So you develop products in Australia as well as sourcing others internationally?

A. "That's right. We've researched and developed many of our very best products locally... but we also have an extensive network of overseas partners whose products we distribute throughout Australia and New Zealand. These include some of the best known animal health companies in the world.

"An example of the importance of such partnerships is a product developed by our Spanish colleague, HIPRA. In a world first this year, HIPRA launched a polyvalent inactivated vaccine against mastitis in dairy cows, in an injectable emulsion. Currently available only in Europe, Oceania is next and Abbey will soon be distributing UBAC® throughout Australia - the only specific vaccine against *Strep. uberis* in the world.

"Then there's UNIFERON® - a product developed by our Danish partner company PHARMACOSMOS. It's considered by many vets to be the very best 'heavy metal-free' injectable iron supplement for pigs available on the market. And Australian consultant vets right across the country can now access UNIFERON® through Abbey.

Q. So in closing, how would you sum up Abbey's position and aspirations in Australia?

A: "I believe that the reason our customers buy our products really comes down to what we call our '3 Rs':

- **Range** – that is, our portfolio of the highest quality products, which is literally growing by the month
- **Reliability** – we service both large and smaller veterinary practices right across the country and do everything we can to support their needs
- **Relationships** – we see building trust with vets as essential to our future success, so we do our utmost to help them with whatever products they're looking for

"If we continue to do these three things well, we'll continue to be successful and to grow... and if there are vets out there who haven't yet heard of us, they soon will."

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STUDY CONFIRMS CATS CAN BECOME INFECTED WITH AND MAY TRANSMIT COVID-19 TO OTHER CATS

IN A STUDY PUBLISHED RECENTLY IN THE NEW ENGLAND JOURNAL OF MEDICINE, SCIENTISTS IN THE U.S. AND JAPAN REPORT THAT IN THE LABORATORY, CATS CAN READILY BECOME INFECTED WITH SARS-COV-2, THE VIRUS THAT CAUSES COVID-19, AND MAY BE ABLE TO PASS THE VIRUS TO OTHER CATS.

Professor of Pathobiological Sciences at the University of Wisconsin School of Veterinary Medicine Yoshihiro Kawaoka led the study, in which researchers administered to three cats SARS-CoV-2 isolated from a human patient. The following day, the researchers swabbed the nasal passages of the cats and were able to detect the virus in two of the animals. Within three days, they detected the virus in all of the cats.

The day after the researchers administered virus to the first three cats, they placed another cat in each of their cages. Researchers did not administer SARS-CoV-2 virus to these cats.

Each day, the researchers took nasal and rectal swabs from all six cats to assess them for the presence of the virus. Within two days, one of the previously uninfected cats was shedding virus, detected in the nasal swab, and within six days, all of the cats were shedding virus. None of the rectal swabs contained virus.

Each cat shed SARS-CoV-2 from their nasal passages for up to six days. The virus was not lethal and none of the cats showed signs of illness. All of the cats ultimately cleared the virus.

"That was a major finding for us - the cats did not have symptoms," says Kawaoka, who also holds a faculty appointment at the University of Tokyo. Kawaoka is also helping lead an effort to create a human COVID-19 vaccine called CoroFlu.

The findings suggest cats may be capable of becoming infected with the virus when exposed to people or other cats positive for SARS-CoV-2. It follows a study published in Science by scientists at the Chinese Academy of Agricultural Sciences that also showed cats (and ferrets) could become infected with and potentially transmit the virus. The virus is known to be transmitted in humans through contact with respiratory droplets and saliva.

"It's something for people to keep in mind," says Peter Halfmann,

a research professor at UW-Madison who helped lead the study. "If they are quarantined in their house and are worried about passing COVID-19 to children and spouses, they should also worry about giving it to their animals."

Both researchers advise that people with symptoms of COVID-19 avoid contact with cats. They also advise cat owners to keep their pets indoors, in order to limit the contact their cats have with other people and animals.

Kawaoka is concerned about the welfare of animals. The World Organisation for Animal Health and the Centres for Disease Control and Prevention say there is "no justification in taking measures against companion animals that may compromise their welfare."

Humans remain the biggest risk to other humans in transmission of the virus. There is no evidence cats readily transmit the virus to humans, nor are there documented cases in which humans have become ill with COVID-19 because of contact with cats.

There are, however, confirmed instances of cats becoming infected because of close contact with humans infected with the virus, and several large cats at the Bronx Zoo have also tested positive for the virus.

For instance, according to an April 22 announcement from the U.S. Department of Agriculture, two cats in two private homes in New York state tested positive for COVID-19. One had been in a home with a person with a confirmed case of the viral disease. The cats showed mild signs of respiratory illness and were expected to make a full recovery.

Additional cats have also tested positive for COVID-19 after close contact with their human companions, says Sandra Newbury, director of the UW-Madison Shelter Medicine Program. Newbury

"It's something for people to keep in mind, if they are quarantined in their house and are worried about passing COVID-19 to children and spouses, they should also worry about giving it to their animals."

Professor Peter Halfmann

is leading a research study in several states in the U.S. to test animal-shelter cats that might have previously been exposed to human COVID-19 cases.

"Animal welfare organisations are working very hard in this crisis to maintain the human-animal bond and keep pets with their people," says Newbury. "It's a stressful time for everyone, and now, more than ever, people need the comfort and support that pets provide."

Newbury has worked with the CDC and the American Veterinary Medical Association to develop recommendations for shelters housing potentially exposed pets, which they may do while owners are hospitalised or otherwise unable to provide care because of their illness. The UW-Madison study helps confirm experimentally that cats can become infected, though the risk of natural infection from exposure to SARS-CoV-2 seems to be quite low, Newbury says. Of the 22 animals the program has tested, none have had positive polymerase chain reaction tests for the virus, she adds.

"Cats are still much more likely to get COVID-19 from you, rather than you get it from a cat," says Keith Poulsen, director of the Wisconsin Veterinary Diagnostic Laboratory, who recommends that pet owners first talk to their veterinarians about whether to have their animals tested. Testing should be targeted to populations of cats and other species shown to be susceptible to the virus and virus transmission.

With respect to pets, "we're targeting companion animals in

Journal References:

Peter J. Halfmann, Masato Hatta, Shihō Chiba, Tadashi Maemura, Shufang Fan, Makoto Takeda, Noriko Kinoshita, Shin-ichiro Hattori, Yuko Sakai-Tagawa, Kiyoko Iwatsuki-Horimoto, Masaki Imai, Yoshihiro Kawaoka. Transmission of SARS-CoV-2 in Domestic Cats. *New England Journal of Medicine*, 2020; DOI: 10.1056/NEJM2013400

communal residences with at-risk populations, such as nursing homes and assisted living facilities," Poulsen says. "There is a delicate balance of needing more information through testing and the limited resources and clinical implications of positive tests."

So, what should pet owners do?

Ruthanne Chun, associate dean for clinical affairs at UW Veterinary Care, offers the following advice:

- If your pet lives indoors with you and is not in contact with any COVID-19 positive individual, it is safe to pet, cuddle and interact with your pet.
- If you are COVID-19 positive, you should limit interactions with your pets to protect them from exposure to the virus.
- Additional guidance on managing pets in homes where people are sick with COVID-19 is available from the American Veterinary Medical Association and CDC, including in this FAQ from AVMA.

"As always, animal owners should include pets and other animals in their emergency preparedness planning, including keeping on hand a two-week supply of food and medications," she says. "Preparations should also be made for the care of animals should you need to be quarantined or hospitalised due to illness."

The study was supported by the U.S. National Institute of Allergy and Infectious Diseases and by the Japan Agency for Medical Research and Development.

THERE'S A NEW TOOL TO FIND OUT IF CATS HAVE DEGENERATIVE JOINT DISEASE?

With an estimated 10-15% of adults over the age of 60 having some degree of osteoarthritis, otherwise known as degenerative joint disease (DJD), many people will be familiar with, or will know someone who suffers from, this painful and debilitating condition. What is not well recognised is that DJD, where the protective cartilage that cushions the end of the bones wears down over time, affects a high proportion of pet cats of all age groups, but particularly those 10 years of age and over. The study was published recently in the *Journal of Feline Medicine and Surgery* (JFMS)¹ provides a screening checklist to help veterinarians and owners to identify cats experiencing DJD-associated pain.

The team of researchers that developed the new tool are based at North Carolina State University (NCSU) in the USA, and led by Margaret Gruen and Duncan Lascelles. They were concerned that feline DJD remains underdiagnosed and undertreated in veterinary practice despite its high prevalence; earlier research has revealed, for example, that 90% of cats are likely to have radiographic signs of DJD, with at least 40% showing related signs of pain. The authors suggest that one possible reason for this is that while many people may associate limping with joint pain, this is actually a less common sign of DJD in cats. Meanwhile other, more typical behavioral signs of DJD (such as difficulty navigating stairs) may be misinterpreted as normal aging.

In their study, the authors collated questionnaire data from five studies previously carried out at the Translational Research in Pain Program at NCSU. This enabled them to compare 249 cats with, and 53 cats without, DJD-associated pain, and, via a multistep process of analysis, develop a set of questions that can be answered with a straightforward 'yes' or 'no'. After some further refinement, they came up with a final checklist comprising six questions. These ask whether a cat can jump up and down

normally, climb up and down stairs normally and run normally, and whether it chases moving objects such as toys and prey. The checklist can also be used for owners and cats living in a single-storey home by excluding the questions about stairs.

In developing this new tool, referred to as the 'Feline Musculoskeletal Pain Screening Checklist', the researchers compared the scoring of owners who were both aware or unaware of the link between DJD and pain in cats. Unsurprisingly, they found a gap in the responses between the groups, with a higher percentage of 'DJD-informed' owners scoring their cats as impaired for every question. The authors suggest that, given the high prevalence of feline DJD, many cats with undiagnosed DJD would nonetheless still be identified using the checklist; and, when coupled with owner education and engagement in watching for behavioural changes in their cats, the detection of DJD should improve even more.

The authors conclude that this checklist not only provides a clinically expedient tool likely to increase vets' ability to screen for DJD pain in cats, but it may also further provide a foundation for increasing awareness of DJD pain among cat owners. Cats being cats are more likely to display behavioural signs of DJD-associated pain at home compared with in the veterinary clinic, meaning owners are well placed to help in the diagnosis of this condition. The idea is that the checklist can be completed quickly by owners, and if 'no' is selected for any question, this will prompt further evaluation by the vet and treatment to improve the cat's comfort levels.

Animations indicating how healthy cats and cats with DJD-associated pain might perform each of the activities in the Feline Musculoskeletal Pain Screening Checklist can be found as part of a larger checklist at: <http://catochecklist.com>



Journal References:

Enomoto M, Lascelles BD, Gruen ME. Development of a checklist for the detection of degenerative joint disease-associated pain in cats. *J Feline Med Surg*. Epub ahead of print 3 March 2020. DOI: 10.1177/1098612X20907424. The article is free to read here: <https://journals.sagepub.com/doi/full/10.1177/1098612X20907424>

NEW RESEARCH UNPICKS ROOT CAUSES OF SEPARATION ANXIETY IN DOGS

Separation anxiety in dogs should be seen as a symptom of underlying frustrations rather than a diagnosis, and understanding these root causes could be key to effective treatment, new research by animal behaviour specialists suggests.

Many pet owners experience problem behaviour in their dogs when leaving them at home. These behaviours can include destruction of household items, urinating or defecating indoors, or excessive barking and are often labelled as 'separation anxiety' as the dog gets anxious at the prospect of being left alone.

Treatment plans tend to focus on helping the dog overcome the 'pain of separation', but the current work indicates dealing with various forms of frustration is a much more important element of the problem.

Animal behaviour researchers have now identified four key forms of separation anxiety, and suggest that animal behaviourists should consider these underlying reasons as the issue that needs treating, and not view 'separation anxiety' as a diagnosis.

The team, led by scientists from the University of Lincoln, UK, identified four main forms of distress for dogs when separated from their owners. These include a focus on getting away from something in the house, wanting to get to something outside, reacting to external noises or events, and a form of boredom.

More than 2,700 dogs representing over 100 breeds were included in the study.

Daniel Mills, Professor of Veterinary Behavioural Medicine in the School of Life Sciences at the University of Lincoln, said: "Until now, there has been a tendency to think of this as a single condition, ie "My dog has got separation anxiety" and then to focus on the dependence on the owner and how to make them more independent. However, this new work indicates that

having separation anxiety is more like saying "My dog's got an upset tummy" which could have many causes and take many forms, and so both assessment and treatment need to be much more focused.

"If your dog makes themselves ill by chewing something it shouldn't, you would need to treat it very differently to if it has picked up an infection. One problem might need surgery and the other antibiotics."

"Labelling the problem of the dog who is being destructive, urinating or defecating indoors or vocalising when left alone as separation anxiety is not very helpful. It is the start of the diagnostic process, not the end. Our new research suggests that frustration in its various forms is very much at the heart of the problem and we need to understand this variety if we hope to offer better treatments for dogs."

The new study, published in the academic journal *Frontiers in Veterinary Science*, highlights how different emotional states combine to produce problem behaviours in dogs. Although it is first triggered by the owner's departure, the unwanted behaviour arises because of a combination of risk factors that may include elements of the dog's temperament, the type of relationship it has with the owner and how the two of them interact.

The research team will soon be building on the latest study to examine in greater detail the influence the dog-owner relationship has on problem behaviours triggered by separation. It is hoped the research will open up new, more specific treatment programmes for owners.



Journal References:

Luciana S. de Assis, Raquel Matos, Thomas W. Pike, Oliver H. P. Burman, Daniel S. Mills. Developing Diagnostic Frameworks in Veterinary Behavioral Medicine: Disambiguating Separation Related Problems in Dogs. *Frontiers in Veterinary Science*, 2020; 6 DOI: 10.3389/fvets.2019.00499

COSTLY PIG LUNG DISEASE PUZZLE SOLVED

QUEENSLAND RESEARCHERS HAVE DISCOVERED THAT A PREVIOUSLY UNRECOGNISED BACTERIUM IS RESPONSIBLE FOR THE SIGNS OF LUNG DISEASE FOUND IN PIG CARCASSES, RATHER THAN A SIMILAR, INTERNATIONALLY RECOGNISED INFECTION THAT THE ANIMALS HAD BEEN VACCINATED AGAINST.

Having solved the disease mystery, the research team at the Queensland Alliance for Agriculture and Food Innovation (QAAFI) is now working to develop on-farm tests and treatments for the new infection.

Several years ago it was noticed that lesions, abscesses and pleurisy found in the lungs of pigs at abattoirs looked very similar to those associated with a known serious pig respiratory disease, porcine pleuropneumonia. This is caused by the bacterium *Actinobacillus pleuropneumoniae*, which was assumed to be the culprit, despite the fact that animals had had been fully vaccinated.

Porcine pleuropneumonia is a major economic disease that causes animals to lose weight at a critical growth stage. Previous research has shown that animals' average daily gain can drop by up to 20% until halted by treatment, with the animals requiring an extra 20 or so days to recover. This leads to a considerable

increase in production costs, or if a producer decided to sell the animals underweight, the losses could be as high as \$60 per pig.

New species discovered

Australian Pork Limited put QAAFI researchers on the case. They discovered one new species and another potential new species of lung-infecting bacteria, which put to rest concerns that current vaccines simply weren't working.

Project leader Dr Conny Turni from the University of Queensland says that when the unexplained signs of disease were found, it was in the same growth period in which porcine pleuropneumonia caused by *Actinobacillus pleuropneumoniae* occurs.

"We had been storing isolates from some diseased pigs but hadn't been able to identify them until a couple of years ago when we had two master's students work on them, and they determined

"We had been storing isolates from some diseased pigs but hadn't been able to identify them until a couple of years ago when we had two master's students work on them, and they determined that a number of these isolates represented a new bacterial species" Dr Conny Turni



that a number of these isolates represented a new bacterial species," says Dr Turni.

However, the researchers couldn't continue the formal process of describing and naming the new species because the discovery occurred at the same time that the closest known relative to the new organism, *Haemophilus parasuis*, was being renamed *Glaesserella* by US researchers. Once the new genus was formally recognised in 2019, the QAAFI researchers could announce *Glaesserella australis* as a new species.

On-farm effects

Dr Turni says *G. australis* is associated with two disease scenarios. One is where there are no apparent clinical signs of disease on-farm, but at the abattoir the carcass has lesions and abscesses in the lungs that are very similar to those caused by *Actinobacillus pleuropneumoniae*.

In the other disease scenario *G. australis* causes clinical signs in pigs on-farm, at 12 to 20 weeks of age, with some cases being fatal.

Dr Turni says continuing research into *G. australis* has led to a diagnostic assay that is currently being validated. This involves testing 26 *G. australis* isolates, 15 reference strains and one field isolate of *A. pleuropneumoniae*, 16 reference strains for another bacterium (*Pasteurella multocida*) that causes respiratory disease, and another 47 strains and field isolates representing 12 genera and 26 species of similar bacteria.

To determine the prevalence of *G. australis*, the researchers sampled lungs with lesions, abscesses and pleurisy from 23 farms in NSW, 43 in Queensland, one in SA and 27 in Victoria. This data is still being analysed.

For future on-farm diagnosis, the QAAFI team is investigating the potential for nasal and tonsil swabbing to see if this will detect the bacterium in live pigs, which would simplify control and management of the disease.

Another part of the project is examining methods to determine the antimicrobial sensitivity profile of *G. australis* isolates to help the industry develop targeted, effective treatment programs.

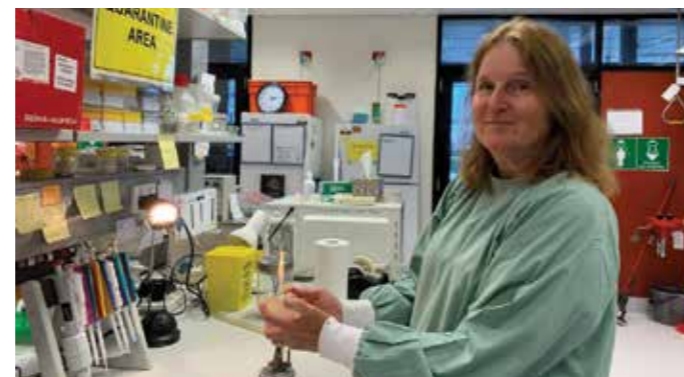
Manager, Production Innovation at Pork Australia, Rebecca Athorn says the discovery of *G. australis* delivers both animal health and economic benefits for the industry.

"The judicious use of antimicrobials and antibiotics is an industry priority. This discovery, and the development of an assay to test for this particular bug, allowing targeted treatment, is significant to the industry's efforts overall to increase vaccine efficiency," she says.

This research is funded by Australian Pork Limited and the Department of Agriculture and Fisheries.



Glaesserella australis on blood plate with *Staphylococcus aureus* displaying satellitism. Photo credit: University of Queensland



Dr Conny Turni, Senior Research Fellow, Centre for Animal Science, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland in the lab. Photo credit: University of Queensland



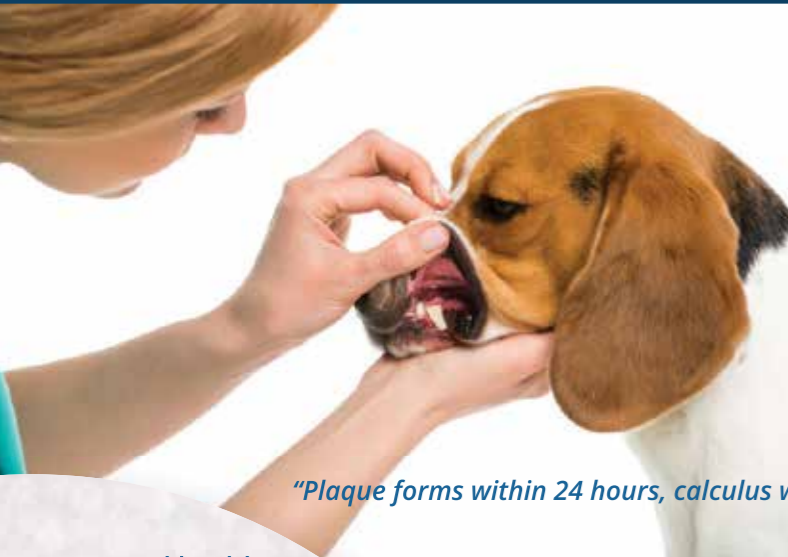
Enzyme test. Photo credit: University of Queensland

Zinc: Plaque's natural enemy

BRUCE ADDISON, Veterinary Microbiologist • Addison Biological Laboratory, Inc.



Customer feedback



"Plaque forms within 24 hours, calculus within 3 days and gingivitis begins as early as 2 weeks."
— WSAVA.org

Pet oral health care is an ongoing challenge for pet owners and veterinary teams. Periodontal disease is the number one health problem in small animal patients, according to the American Kennel Club. By age 3, more than 80 percent of dogs and cats have some form of periodontal, or gum disease. Pet owner resistance to in-clinic dental procedures that involve x-rays and anesthesia is well known.

To optimize pet health, **the starting point for comprehensive oral care must be in the home** where bad breath is the primary warning sign. Most veterinary clinic personnel miss the opportunity to educate pet owners about daily oral care and promote in-home solutions for their pets.

Quite simply, "a chew alone won't do."

Working with natural zinc compounds, Addison Biological Laboratory pioneered the use of a natural, zinc-based compound that is safe for daily use, inexpensive, taste-free and provides excellent pet acceptance. The unique formula works to break down plaque on contact and can be used daily without brushing.

Addison's neutralized zinc is a combination of select amino acids and zinc. Taurine and zinc gluconate form a complex bond that inhibits the precipitation of zinc in the neutral pH (6.7 – 7.0) range. In this narrow pH range, an oral zinc preparation delivers increased bioavailability that ensures its duration of effect and efficacy.

"Zinc is well documented to tie up sulfur compounds in the oral cavity which are a primary cause of bad breath, the first signal of impending dental disease." — Bruce Addison, Veterinary Microbiologist, President and Founder

Putting zinc to work

New to the MAXI/GUARD® product family are MAXI/GUARD® Oral Cleansing Wipes. They provide a proprietary neutralized zinc oral care compound on a textured applicator wipe. They are recommended for daily in-home use.

MAXI/GUARD® Oral Cleansing Wipes

Features / Functions	Benefits
• Taste free	• Increases pet acceptance
• Oral product and applicator all-in-one	• No mess; more sanitary than a toothbrush
• Neutralized zinc formulation	• Removes plaque; resolves offensive mouth odors
• Quick and easy wipe application	• Supports pet owner compliance
• 100 textured wipes per large container	• Up to 100 days of effective daily oral care

"For nearly 30 years, we've promoted dental care, brushing at home and yet still only get around 2 percent compliance. We no longer carry paste and brushes. Oral Cleansing Wipes are our home care focus for every dog and cat. Demonstrating the quick, easy wipe method gives clients confidence to do it at home. Wiping during an exam also shows clients the amount of plaque and oral debris resident in their pet's mouth." JB, DVM



"We keep a jar in every exam room and at the front desk. Everyone in the practice is trained to demonstrate and actively promote home dental care." TLP, RVT, VTS (DENTISTRY)

"Our nurses and DVMs get face to face with pets in every exam. This gives us a chance to smell pets' breath and begin screening for oral health issues. To help pet owners understand, we talk about the smell of the breath as we raise the cheek to examine the teeth and gums." JMC, LVT

Resources available on K9 Gums website, www.k9gums.com.au

MAXI/GUARD® Oral Cleansing Wipes demonstration videos
Click on photos to view demonstrations.



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[MAXI/GUARD Dental Client Educational Brochure](#)

Easy, quick, sanitary oral health care for pets.

Related animal health industry materials and references

- **PetHealthNetwork**. Did you know that 4 out of 5 dogs over the age of 3 years have some sort of periodontal disease?
- **Dentistry for dogs, FETCH by WebMD**. "...periodontal disease (i.e. gum disease) occurs 5 times as often in pets as it does in people."
- **AVMA**. Periodontal disease is the most common dental condition in dogs and cats. By the time a pet is 3 years old, it will very likely have some early evidence of periodontal disease. If preventative measures are not taken, it will worsen as the pet grows older.
- **2019 AAHA Dental Care Guidelines for Dogs and Cats**. The guidelines are intended primarily for general practitioners and veterinary team members without advanced dental training. The dental task force encourages all veterinary professionals to continuously improve their veterinary dentistry knowledge, skills, and treatment capabilities and to recognize cases needing referral.
- **World Small Animal Veterinary Association Global Dental Guidelines**. Despite its prevalence, periodontal disease is grossly underdiagnosed... Periodontal disease is generally described in two stages: gingivitis and periodontitis.
- **Veterinary Oral Health Council**. Studies have shown that dogs with severe periodontal disease have more severe microscopic damage in their kidneys, heart muscle and liver than do dogs with less severe periodontal disease.
- Source: **Today's Veterinary Practice**. Periodontal disease has been called the "silent killer."⁵⁰ Periodontal disease is lurking in patients' mouths whether or not a veterinarian chooses to recognize it.
 - By 2 years of age, 80% of dogs and 70% of cats have some form of periodontal disease.³ Small and toy breed dogs are particularly susceptible.⁴
 - Even after teeth are completely cleaned, plaque forms on the tooth surfaces within 24 hours.^{3,5}
 - Lack of homecare for 1 week can result in gingivitis in some patients; for 3 weeks, in all patients.⁶
 - One veterinary study found that pockets became re-infected within 2 weeks of a dental cleaning if homecare was not performed.⁷



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HOT TIME IN THE CITY: URBAN LIZARDS EVOLVE HEAT TOLERANCE

Faced with a gritty landscape of metal fences, concrete walls and asphalt pavement, city lizards in Puerto Rico rapidly and repeatedly evolved better tolerance for heat than their forest counterparts, according to new research from Washington University in St. Louis and the University of California, Los Angeles.

Studies that delve into how animals adapt in urban environments are still relatively rare. But anoles are becoming a model system for urban evolutionary research.

"Urban lizards are exposed to higher temperatures, consistent with the urban heat island effect," said biologist Kristin Winchell, postdoctoral research associate in the Losos laboratory in Arts & Sciences. "We found that they are able to maintain their function at temperatures of about 0.82 degrees C (or 1.47 F) higher on average across all populations."

In one population in this study, urban lizards were able to go about their business in temperatures above 40 C (104 F). That's a lot of heat for a tiny animal - one that measures about 5 centimetres long, not including its tail.

"Better heat tolerance can make all the difference in an urban habitat," Winchell said. "Whether it's being able to stay active during longer parts of the day or being able to occupy perches that reach higher temperatures, it expands their niche space."

This adaptive thermal response is even more interesting because only those lizards that grow up in the city seem to be able to tap into it - an example of natural selection favouring trait 'plasticity,' researchers said. The study was published in March in the journal *Nature Ecology & Evolution*.

A hidden superpower

In previous work, Winchell showed that city lizards have evolved longer limbs and larger toepads with specialised scales. Both of these traits allow them to more effectively and quickly traverse urban habitats, allowing them to climb up smooth, painted walls.

Compared with these adaptations, thermal tolerance is a relatively complex trait. It affects multiple body systems and involves potentially hundreds of genes. And cold-blooded animals like these lizards also have the option to behaviourally regulate temperature - for example, by shuttling in and out of sun, or by changing the time of day when they hunt or look for mates.

Winchell's partner for this effort, Shane Campbell-Staton, assistant professor at UCLA, is an expert at sussing out genomic aspects of thermal adaptation.

"A big part of this story is that the target of selection in urban heat islands is plasticity, the ability of an individual to respond adaptively to its environment," Campbell-Staton said. "Individuals that are high responders - that is, those that can become more heat tolerant when raised in cities - are favoured by natural selection. The major difference is that the adaptation only appears when an individual is born and raised in a city environment."

For example, when Winchell's previous work showed that lizards with long limbs do better in cities, those individuals would have longer limbs no matter where they are raised.

"In contrast, differences in heat tolerance are hidden in a forest habitat and only show themselves when the proper genes are exposed to warm temperatures," Campbell-Staton said. "It's kind of like a hidden superpower that only presents itself in the right environment. We are only just beginning to understand how natural selection works on this type of trait to influence the process of evolution."

Comparing city lizards to forest lizards

The ability to withstand more heat anytime, anyplace, is potentially a game changer for *Anolis cristatellus*, the most abundant and visible species in urban environments of the 10 kinds of lizards that are found across Puerto Rico.

Winchell and her team studied 150 lizards from four municipalities across the island, including the capital San Juan. Each of these locations was part of a paired site: with one lizard collection area in the city, and the other in a nearby forest. The researchers also brought back some of the lizards to a laboratory setting at the University of Massachusetts Boston, where Winchell was a graduate student at the time.

The scientists relied on an established lizard research protocol that tests thermal tolerance as a measure of a lizard's ability to right itself after being placed gently on its back. The researchers raised the temperature by small increments, and the trial ended when a lizard took too long to right itself. After the tests, a cool water bath helped bring the lizards comfortably back down to normal temperatures.

Separately, the researchers also took tissue samples from lizards exposed to cold, ambient and warm temperatures. Genetic tests revealed different patterns of gene expression in the tissues from city and forest lizards exposed to different temperatures.

Even more interesting, the researchers discovered a single gene variant that differed consistently between the city and forest populations - one that was associated with differences in thermal tolerance. The researchers believe that this indicates natural selection is selecting for the ability to respond to higher temperatures when needed, what they refer to as a 'high-plasticity genotype.'

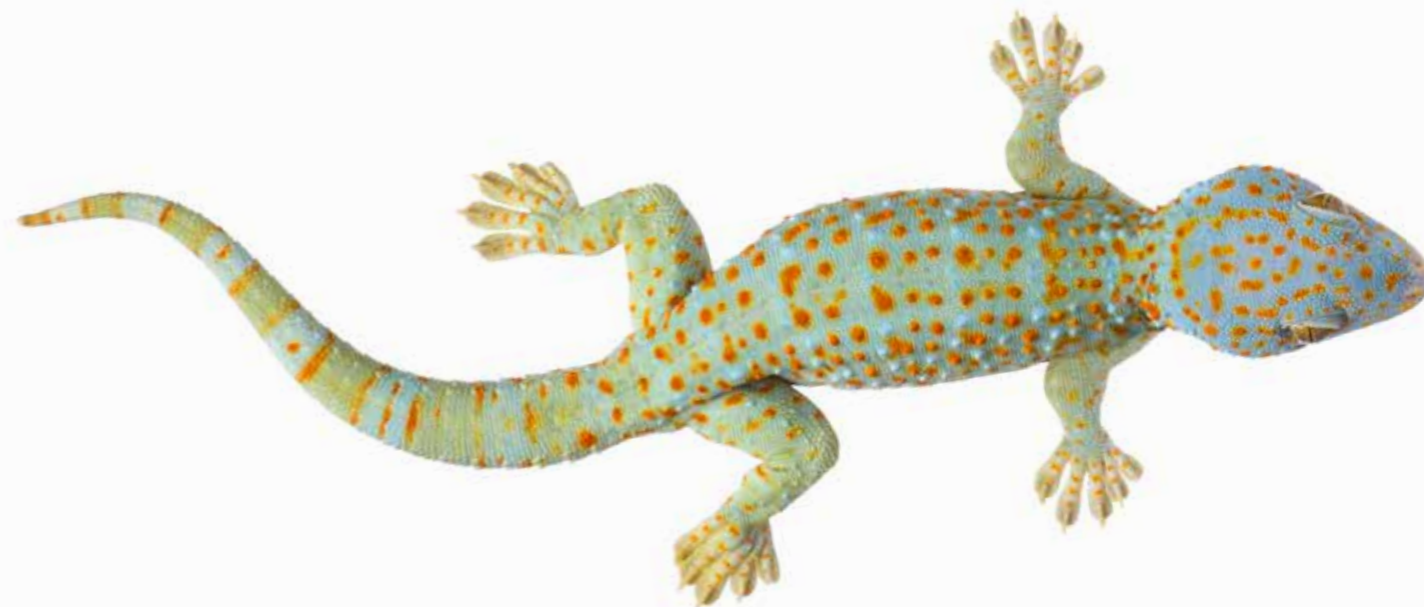
Rapid and repeated changes

"One of the unique and exciting things for me about this study is that we're able to simultaneously address this question about the repeatability of evolution at several different levels of biological organisation," Campbell-Staton said.

"Starting at the whole organism level, we clearly see that urban lizards are able to maintain functioning at significantly higher temperatures than their forest counterparts.

"Then, when we look at all the genes that are being differentially expressed, we see pretty high repeatability in how those large suites of genes are changing as well," he said. "But if you zoom in even further, we found not only a single gene, but what seems to be a single polymorphism that is repeatedly under selection in these urban heat islands as well, which is fascinating."

By studying how animals adapt to different habitats, like life in the



city, researchers have a unique opportunity to investigate traits that are environmentally dependent but influenced by an animal's genetic makeup.

That dynamic is part of why Winchell says she is partial to *A. cristatellus*, which is abundant in urban areas not only in Puerto Rico, but outside of their native range in the southern United States and other parts of the Caribbean.

"I like to say they are urbanophilic, or urban-loving species," Winchell said. "There are other terms that people use, like urban tolerant or urban-adapting. But I think urbanophilic captures it best. They're exploiting novel niche space that isn't present in the forest environment. But they're not reliant on humans. If humans went away, they would still do fine."

Journal References:

Shane C. Campbell-Staton, Kristin M. Winchell, Nicolas C. Rochette, Jason Fredette, Inbar Maayan, Rena M. Schweizer, Julian Catchen. Parallel selection on thermal physiology facilitates repeated adaptation of city lizards to urban heat islands. *Nature Ecology & Evolution*, 2020; DOI: 10.1038/s41559-020-1131-8

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PETS AND THE CORONAVIRUS LOCKDOWN

ANIMALS CAN BE A STRONG EMOTIONAL SUPPORT IN DIFFICULT TIMES, AND IT MIGHT FEEL LIKE WITH ALL THE SPARE TIME DURING THE CORONA LOCKDOWN, NOW IS THE PERFECT TIME TO FOSTER OR ADOPT AN ANIMAL. HOWEVER, THIS NEEDS TO BE A CAREFULLY CONSIDERED UNDERTAKING. WHILST A WONDERFUL THING TO DO, ADOPTION IS A LONG-TERM COMMITMENT, AND FOSTERING SHOULD NOT BE TAKEN LIGHTLY.

Adopt, don't shop

As many people are working from home now to combat the further spread of COVID-19, it is certainly true that this is a good time to adopt or foster. Adopting a pet (rather than buying one) is the best way to add a new family member. There are thousands of animals in shelters, many there through no fault of their own looking for loving permanent homes.

Anyone considering adopting or fostering a shelter animal should bear in mind that at some point our lives will go back to normal once the lockdown has curbed the spread of the virus. It is therefore important that they ensure that they are still able to take care of the animal post the lockdown, especially if adopting.

Some questions to ask yourself to help make this decision are:

- Do you have the financial means to care for a pet for their entire life?
- Do you know enough about the animal's needs and can you fulfil them all?
- Will you be able to walk your pet regularly?
- Who will take care of your pet if you are at work or go on holiday?
- Can you spend enough time with your pet?
- Is your lifestyle suited to have an animal in your care? For example, dogs need a lot of attention and are not suitable for people who spend a large amount of their time away from home, leaving the dog on their own.

Foster care needs similar consideration. After the lockdown ends, fostered animals should not have to go back to the shelter, but rather be kept until they can find a new forever home. Fostering might provide short-term relief for shelters, but when the world returns to normal, shelter animals should not be immediately returned, this is not fair on the shelter or the animal who is in foster care.

Animals can offer wonderful emotional support especially in times of crisis like this. Their presence reduces stress and has a positive impact on mental health. It would be fantastic if the corona lockdown brought about unprecedented levels of animals finding loving homes. But it's crucial to consider carefully if you can provide for a pet for the rest of their life, not just during the lockdown period, so that everyone benefits at the end of the day.

Pets and life after COVID-19 lockdown

Australians are currently spending significantly more time at home, which is particularly beneficial for pets, however, life after lockdown needs to be considered too. Pets who will then spend more time alone must be prepared in due time to return to their usual routine. In this way their well-being can be guaranteed even in times of change.

For dogs, big changes are often a special challenge. Through time spent together, they develop close relationships with their owners. Things become critical when something changes during this time and the dog has to do without the attention of their owner in everyday life.

"In order to get pets used to a normal routine again, it is important

to gradually leave the house for a longer period and show them that their owners will always return home," says Sarah Ross, Companion Animal Expert at FOUR PAWS.

With insecure dogs, even a temporary separation can lead to behavioural problems. Fear of separation which manifests itself through destructive behaviour like damaging furniture, barking and yelping until the owner returns, or depression as a result of loneliness, can be prevented through proper preparation and care.

Cats seem to cope more easily with such situations and generally do not show the same behavioural problems as dogs.

"Although many cats appreciate the attention and closeness of their family, most are independent and also structure their days themselves. It's easier to prepare them for being alone again," says Ross. Nevertheless, cats can also benefit from a few exercise sessions.

Counteracting anxiety

Owners must ensure that their pets continue to feel safe even when the time of constant attention has ended and the world returns to normality. As a pet owner, one can contribute a lot by teaching the pet how to deal with being alone and how to enjoy it.

"For example, feeding games keep the animals occupied longer and distract them from the absence of their owners. Pets should also be given breaks and should be respected if they withdraw of their own accord," says Ross.

Here are a few tips to help you:

- Gradual training: As with training puppies, you can get an adult dog used to being alone again by first leaving the house for just a few minutes, extending it to 15 minutes, then half an hour etc, and slowly increasing this time. Gradually your pet will learn to trust that you will return home again.
- Allow breaks: In between the games you are playing with your pet, ensure you have decent breaks. This downtime is necessary so that your pet gets enough rest and sleep.
- Respect your pet's rest: When your pet retreats to their sleeping place, this rest should be respected, and your pet should be allowed to rest. Make sure any children understand this too.

- Design 'self-entertainment' activities: For example, design a feeding game in which your pet's treat is given in the form of food balls or by using a Kong or something similar. Your pet will have to occupy themselves for a long time to get the food, distracting them while separated from you, and teaching them to entertain themselves.
- Ignore your pet sometimes: It is healthy to ignore your pet sometimes, especially when they are demanding too much attention.
- Dressing and undressing cues: Animals are clever at associating typical exit rituals leading up to their owners leaving the house. It's a good idea to get them used to these by putting on shoes, a jacket and other outfits several times a day without leaving your home.
- Prepare for the impact on your pets: If special circumstances like the COVID-19 crisis or even a broken leg or an illness make it necessary for you to stay at home more than usual, you should absolutely use the time to dedicate extra attention to your pet. However, for their ongoing wellbeing, the attention must be well measured so that it does not result in future problems for your pet such as separation anxiety. Time together can be enjoyed by everyone with careful consideration.

About FOUR PAWS

FOUR PAWS is the global animal protection organisation for animals under human influence, which reveals suffering, rescues animals in need and protects them. Founded in 1988 in Vienna by Heli Dugler, the organisation advocates for a world where humans treat animals with respect, empathy and understanding.

FOUR PAWS' sustainable campaigns and projects focus on companion animals including stray dogs and cats, farm animals and wild animals - such as bears, big cats, orangutans and elephants - kept in inappropriate conditions, as well as in disaster and conflict zones. With offices in Australia, Austria, Belgium, Bulgaria, Germany, Kosovo, the Netherlands, Switzerland, South Africa, Thailand, Ukraine, Hungary, the UK, the USA and Vietnam, as well as sanctuaries for rescued animals in twelve countries, FOUR PAWS provides rapid help and long-term solutions.

www.four-paws.org.au



PETSURE TO ENABLE REMOTE VETERINARY CARE FOR PETS VIA TELEVET STARTUP VETCHAT

Telemedicine is fast becoming an integral part of human healthcare, especially since the acknowledgement of its importance by the federal government, most recently in the announcement this week that Medicare will now cover all telemedicine calls. In parallel to human healthcare, veterinary care also needs to be affordable, convenient and - above all - accessible for pet owners - especially in the case of a lockdown. PetSure, Australia's leading pet insurance administrator, has today announced a new partnership with Vetchat, Australia's leading veterinary telehealth service which gives customers immediate access to a consult with a nationally registered vet via text or video.

PetSure, which invests in emerging technologies to further animal health, has decided to invest in a provider of next-generation digital veterinary services because it views telemedicine as a critical service for pet owners. PetSure will become a 40% shareholder in Vetchat and enter into a strategic partnership to grow veterinary telehealth services in Australia. PetSure's investment will enable the Vetchat business to achieve greater growth to service a large proportion of Australia's pet parents. A PetSure representative and an independent director will sit on the Vetchat Board.

PetSure CEO Alexandra Thomas said: "PetSure exists for the welfare of Australian pets, and we are very glad to be able to invest in building this infrastructure that enables people to continue caring for their pets - especially under the current circumstances.

"Vetchat improves access to veterinary advice via technology, leading to better pet health outcomes. Many people are turning to telehealth services for their own medical needs at this time - now they can do the same for their pets without leaving their house.

"We are constantly innovating to improve pet owners' and vets' experiences, with services like GapOnly™ revolutionising pet insurance to make people's lives easier and less stressful. We have been looking at implementing telehealth infrastructure

for pets for some time, but today it is more needed than ever so we are moving fast to support this business to help as many Australians as soon as possible."

Good for pets, good for vets

Vetchat gives vets a channel to advise pet owners as soon as they have a concern. The opportunity to give personalised advice to concerned pet parents allows vets to reach more animals that need it, faster - not just in the current environment, but under usual circumstances where some people may struggle to get to a clinic and in good time. Vets also benefit from the flexibility of being able to apply their specialised skill set where it's needed, in times that suit them.

Alexandra Thomas added: "Investing in Vetchat has the added benefit of helping vets by offering them a flexible way to supplement their earnings. Like many Australians, they may find their work decreasing right now. Beyond the current environment, it will offer vets that are parents or carers a long-term flexible work opportunity. It's an added perk that we are able to continue to support technological innovation that improves the welfare of pets and the lives of pet parents, as well as an exceptional Australian entrepreneur, with this investment."

Demand for veterinary telemedicine is growing fast around the world, especially in mature pet ownership markets such as UK, US, Sweden. Partnerships with pet insurers and other players in the pet health care sector have proved vital to growing televet businesses and getting them into the hands of pet parents.

Vetchat CEO Dr. Claire Jenkins commented: "Vetchat is Australia's leading veterinary telehealth service, and we are delighted to receive this strategic investment from Australia's top pet insurer. PetSure's investment will help Vetchat continue to build our vision of a world where pets and carers can access vets anywhere, anytime.

"Vetchat provides families peace of mind by immediately

connecting their pets with Australian licensed vets via video and text chat consultations. Pet carers can describe and show their pet's issue and receive advice around what to do next from a qualified expert - including whether the issue can be safely managed at home or requires a hands-on examination or test, as well as an understanding of the problem's urgency.

"Vetchat is complementary to bricks-and-mortar vet clinics, where pets need to be seen for diagnosis and medications. It extends personalised pet care to the home, providing a trusted advisor to pet owners at every stage of a pet's life, from choosing a pet, to their diet, health, behaviour and end of life advice. It's the speed and the quality of the advice that makes Vetchat so valuable, lifting the level of pet care.

"Just as we do for our own health, people want instant, personalised service delivered on their devices, and are adopting of telehealth as a viable alternative to in-person doctor visits. People will want the same option for their other family members, their pets."

DOGS, TOO, CAN EXPERIENCE HEARING LOSS

Just like humans, dogs are sometimes born with impaired hearing or experience hearing loss as a result of disease, inflammation, aging or exposure to noise. Dog owners and K-9 handlers ought to keep this in mind when adopting or caring for dogs, and when bringing them into noisy environments, says Dr. Kari Foss, a veterinary neurologist and professor of veterinary clinical medicine at the University of Illinois at Urbana-Champaign.

In a new report in the journal *Topics in Companion Animal Medicine*, Foss and her colleagues describe cases of hearing loss in three working dogs: a gundog, a sniffer dog and a police dog. One of the three had permanent hearing loss, one responded to treatment and the third did not return to the facility where it was originally diagnosed for follow-up care.

The case studies demonstrate that those who work with police or hunting dogs "should be aware of a dog's proximity to gunfire and potentially consider hearing protection," Foss said. Several types of hearing protection for dogs are available commercially.

Just as in humans, loud noises can harm the delicate structures of a dog's middle and inner ear.

"Most commonly, noise-induced hearing loss results from damage to the hair cells in the cochlea that vibrate in response to sound waves," Foss said. "However, extreme noise may also damage the eardrum and the small bones within the inner ear, called the ossicles."

Pet owners or dog handlers tend to notice when an animal stops responding to sounds or commands. However, it is easy to miss the signs, especially in dogs with one or more canine companions, Foss said.

"In puppies with congenital deafness, signs may not be noticed until the puppy is removed from the litter," she said.

About Vetchat

Vetchat was founded in 2015 and is led by Dr. Claire Jenkins, an experienced vet who has directly led the business as CEO since inception.

Today, Vetchat has around 13 vets available on its platform for consults. It is currently recruiting for Veterinary surgeons interested in online Veterinary positions. Those interested can get in touch at service@vetchat.com.au.

About PetSure

Emerging from humble beginnings 20 years ago, PetSure is a pet business that currently provides a sense of security to almost half a million Australians who are devoted to their life with pets. PetSure underwrites and administers the pet insurance propositions of more than 25 brands, including IAG, AAMI, Woolworths, RSPCA, Pet Barn, Guide Dogs, Medibank, Bupa and HCF.

PetSure is a major contributor to the vet industry in Australia and accounts for almost 10% of all the vet expense paid for by Australians. In addition to our fast claims turnaround process, we also offer GapOnly™, the first claim reimbursement service in Australia whereby a customer does not have to leave the vet in order to receive their claim reimbursement.

Signs of hearing loss in dogs include failing to respond when called, sleeping through sounds that normally would rouse them, startling at loud noises that previously didn't bother them, barking excessively or making unusual vocal sounds, Foss said. Dogs with deafness in one ear might respond to commands but could have difficulty locating the source of a sound.

If pet owners think their pet is experiencing hearing loss, they should have the animal assessed by a veterinarian, Foss said. Hearing loss that stems from ear infections, inflammation or polyps in the middle ear can be treated and, in many cases, resolved.

Hearing-impaired or deaf dogs may miss clues about potential threats in their surroundings, Foss said.

"They are vulnerable to undetected dangers such as motor vehicles or predators and therefore should be monitored when outside," she said.

If the hearing loss is permanent, dog owners can find ways to adapt, Foss said.

"Owners can use eye contact, facial expressions and hand signals to communicate with their pets," she said. "Treats, toy rewards and affection will keep dogs interested in their training." Blinking lights can be used to signal a pet to come inside.

Hearing loss does not appear to affect dogs' quality of life, Foss said.

"A dog with congenital hearing loss grows up completely unaware that they are any different from other dogs," she said. "Dogs that lose their hearing later in life may be more acutely aware of their hearing loss, but they adapt quite well. A dog's life would be significantly more affected by the loss of smell than by a loss of hearing."

Journal References:

Danielle C. Schneider, Kari D. Foss, Luisa De Riso, Devon W. Hague, Ashley E. Mitek, Maureen McMichael. Noise-Induced Hearing Loss in 3 Working Dogs. *Topics in Companion Animal Medicine*, 2019; 37: 100362 DOI: 10.1016/j.tcam.2019.100362

PUPPY DENTAL MALOCCLUSION: DECIDUOUS MANDIBULAR CANINE AND INCISOR TEETH EXTRACTION AND PERMANENT CANINE TEETH CROWN EXTENSIONS

BY DR DAVID E CLARKE REGISTERED SPECIALIST, VETERINARY DENTISTRY AND ORAL SURGERY

ORAL PATHOLOGY AND THE DENTITION OF YOUNG ANIMALS IS OFTEN OVERLOOKED AND UNDER TREATED. THIS IS OFTEN BECAUSE, DURING THE PERIOD DECIDUOUS TEETH ARE PRESENT, A PUPPY IS EXAMINED ONLY TWICE FOR VACCINATIONS. IT IS ALSO COMMON FOR THE VETERINARY PRACTICE TO FIND IT DIFFICULT TO THOROUGHLY EXAMINE THE ORAL CAVITY, ESPECIALLY AS A PUPPY MAY WRIGGLE, BITE OR RESENT HAVING ITS MOUTH OPENED. THEREFORE, MANY DENTAL PROBLEMS AND MALOCCLUSIONS MAY BE MISSED DURING THIS IMPORTANT GROWTH PERIOD.

The juvenile pet and deciduous dentition has unique conditions, and dealing with them correctly and in a timely manner is essential. When a puppy has a malocclusion and/or the deciduous dentition show abnormal positioning, retention of the canine and incisor teeth may not only cause a detrimental interlock of the teeth into the hard palate, resulting in ulceration and interfering with mandibular growth, but they may also influence their permanent counterparts to erupt into an abnormal position.

In the first case study, a Class 2 malocclusion was noticed and early intervention undertaken to remove hard palate trauma, encourage mandibular growth and eruption of permanent teeth into atraumatic occlusion. In the second case study, the mandibular canine teeth were erupting lingually and treated using crown extensions to encourage eruption into the diastema to achieve an atraumatic healthy occlusion.

Case Study 1

Momo, a 5.2kg 10.5 wo female Keeshond was referred following presentation at her regular veterinarian for a routine vaccination. During the examination, the mandible was found to be short (Class 2 malocclusion) resulting in malposition of the mandibular canine (704, 804) and incisor (701, 702, 703, 801, 802, 803) teeth, which were penetrating and causing ulceration of the hard palate. Clinical examination found Momo to be healthy - T38.9C, HR 168, RR 20, mentation bright and alert, body condition score 5/9. Oral examination confirmed the above findings.



Figure 1. Front view showing relationship of jaw length and Class 2 malocclusion.

Figure 2. Right side of mouth showing the malocclusion.

Figure 3. Left side of mouth showing the malocclusion.

Figure 4. Front ventral view of mouth showing malocclusion.

Figure 5. Open mouth view to show trauma and ulceration of the hard palate.

It was recommended that the deciduous incisor and canine teeth be extracted as soon as possible to relieve the unfavourable trauma and inflammation, relieve pain and give the mandible an opportunity to lengthen if it was not genetically short and the permanent mandibular canine and incisor teeth opportunity to erupt and achieve normal occlusion. At 10 weeks of age, there is only a short period in which extraction will yield a favourable outcome. Ideally extractions of this nature are undertaken at 7 - 8 weeks of age and no later than 12 weeks of age¹. This is primarily because the crown of the canine tooth forms between 8 and 13 weeks of age, which is followed by root formation and crown/tooth eruption. The permanent canine teeth erupt approximately 5-6 months of age, so a longer time to allow the mandible to lengthen is desirable. If the deciduous teeth remain persistent, it is highly likely the permanent teeth will erupt lingual to the deciduous teeth. Momo's owner was advised that malocclusion of the jaw is highly likely to be genetic in nature and the permanent teeth may require further surgery to assist in their positioning even after surgical extraction of the deciduous teeth. In animals with serious malocclusions, where dental contact or advanced soft tissue injury occurs, extraction of the deciduous teeth may not relieve the problem due to the genetic influences on jaw growth.

Pre-anaesthetic health check using IDEXX in-clinic machines showed the haematology and biochemistry parameters to be normal. Momo was admitted and intravenous fluid therapy commenced using Hartmann's solution @ 5ml/kg/hr after placement of an indwelling #22 catheter in the right cephalic vein. Anaesthesia was administered using a methadone pre-med and propofol induction, bilateral mental nerve blocks were placed using 0.2mls mepivacaine 3% solution.

Momo was monitored during anaesthesia by measuring blood pressure, spO₂, temperature, heart rate, CO₂ and respiratory rate. Momo was kept warm using an air forced heating blanket. The mouth was examined and a dental chart completed using an electronic charting system, www.vetdentalcharts.com. The rostral mandible was radiographed using a DR #2 Sopix sensor (Acteon Imaging) prior to extraction.

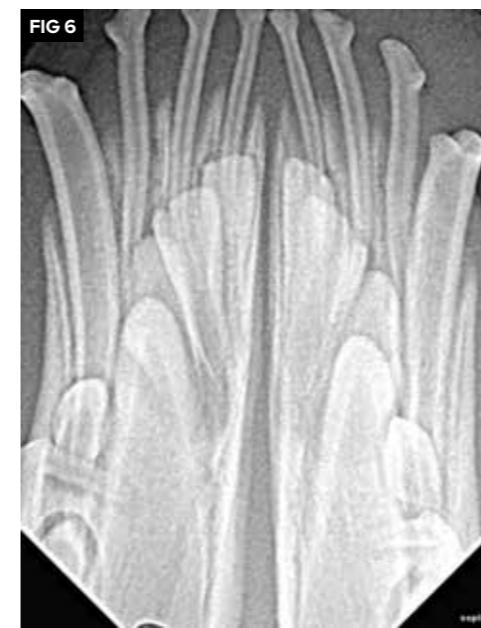


Figure 6. Radiograph of the rostral mandible showing the roots of the incisor and canine teeth.

The epithelial attachment of the canine and incisor teeth was initially severed using a Molt 2/4 periosteal elevator (Cislak, USA) and 1.3S-XS elevator respectively. The 1.3S-XS elevator was then advanced apically on the lingual and buccal canine tooth root surfaces to approximately 75% of the length of the root to sever the periodontal ligament with firm but controlled force. The curved deciduous elevator was introduced into the gingival

sulcus to sever the mesial and distal periodontal ligament using the concave surface against the mesial root and convex surface against the distal root to approximately 50% of the length of the root. Once the tooth became mobile, the Molt was reintroduced along each surface and gently rotated moving the tooth in each direction. The incisor teeth were extracted using a 1.3S-XS elevator to continue to work around the circumference of each tooth to sever the periodontal ligament as the elevator was pushed apically. Each tooth was then grasped with the small animal extraction forceps and gently removed from the socket with gentle rotation. All teeth were examined to ensure complete removal, which was confirmed visually and by radiography.



Figure 7. Extracted teeth.



Figure 8. Radiograph of right rostral mandible showing complete removal of canine and incisor teeth.



Figure 9. Radiograph of left rostral mandible showing complete removal of canine and incisor teeth.

The sockets were also visually checked to ensure a blood clot was present and left open to granulate.



Figure 10. Blood clots post extraction.

Momo recovered well from anaesthesia. She was given Metacam injectable 2.5mg SQ and discharged home the same day with 0.75mg SID PO for 2 days. No antibiotics were required.

Re-evaluation every 2 weeks was conducted to fit in with the owner's schedule. Her owner was advised to monitor the extraction sites for any abnormal swelling or discharge and was asked to offer food which could be compressed between the owner's thumb and forefinger, without being mushy.

Momo was scheduled for re-examination to check eruption of the permanent teeth once they have erupted through the gingiva. At this time, if the mandible has lengthened and the teeth are erupting into a normal occlusion, no treatment is required. Whereas, if the mandible remained short and the permanent teeth are lingually displaced, or causing trauma to the hard palate or maxillary teeth, further treatment options include:

- 1. Coronal extensions to direct the erupting canine teeth into the correct occlusion.
- 2. Placement of an incline plane to orthodontically tip the mandibular canine teeth laterally.

- 3. Crown amputation and direct pulp capping of any or all teeth causing trauma.
- 4. Extraction of the mandibular canine and/or incisor teeth.

Case Study 2.

Alice, a 5 month old Staffordshire Terrier, presented with partially erupted lingually displaced mandibular canine teeth causing trauma to the hard palate in the diastema. Option 1 coronal extensions were placed to direct the canine teeth eruption into an atraumatic healthy occlusion. The ideal time to perform this is when the teeth have erupted 5-6mm through the gingiva. A standard acid etch technique was used: 1. Ultrasonically clean teeth, 2. Polish with fluoride/glycerine free pumice, 3. Acid etch tooth cusp, 4. Apply bond, 5. Place composite restorative onto tooth cusp and contour to ensure tooth erupts into correct position. Inform owners that patient MUST not chew, play ball, tug on toys etc. as the teeth will continue to lengthen and be prone to fracture. After 30-45 days, once teeth have erupted into position, remove composite with disks, smooth and bond surface of tooth.



Figure 11. Right side of mouth with malocclusion.



Figure 12. Left side of mouth with malocclusion.



Figure 13. Right canine tooth with coronal extension.



Figure 14. Left canine tooth with coronal extension.



Figure 15. Right side occlusion post coronal extension removal.



Figure 16. Left side occlusion post coronal extension removal.

Discussion

The practice of interceptive orthodontics should ideally be performed between six to eight weeks, (no later than 12 weeks), after which time the permanent teeth eruptions are imminent, and often take the abnormal place of their predecessors.

The actual process of exodontia should be carried out with extreme caution to minimise potential damage to the permanent tooth bud under the gingival surface. Infiltration of a local anaesthetic will help with local discomfort. Elevation of the tooth should be done gently with gradual forces.

During extraction, care was taken not to lever against the underlying crown and developing permanent tooth buds, which are positioned on the lingual aspect of the deciduous teeth. Taking care to reduce inflammation, reduces the surrounding temperature, thus avoiding damage to the enamel of the developing permanent dentition, as the ameloblasts are sensitive to temperature change.

Extreme gouging and rotation should be avoided to prevent fracture of the delicate deciduous roots. If the crown breaks off, attempts should be made to completely retrieve the remaining roots, but again with care. If necessary, a moderate gingival flap and alveoplasty may be performed to expose the root tip. If infection is present, oral antibiotics should be continued post-operatively. Whenever attempting deciduous extractions, the owner should be notified that changes may occur to the permanent tooth, no matter how carefully the procedure is done. These changes may range from very mild enamel pitting, to more severe enamel and root dysplasias, and even malpositioned or unerupted teeth.

Class 2 malocclusions, although not proven to be under genetic control, are certainly observed commonly in general small animal practice, and are not breed nor sex dependent. When a puppy

is found with a Class 2 malocclusion, interceptive orthodontics can be performed, however the owner should receive genetic counselling and the patient desexed to prevent future generations suffering the same fate.

Following extractions, each patient should be re-examined when the permanent canine teeth erupt, as they may adopt the position of the previously maloccluded deciduous teeth. At this stage, the client should be given the options, including crown extensions, in order to carefully guide the erupting tooth into a normal, atraumatic healthy occlusion.

References:

Wiggs RB, Lobprise HB. Veterinary Dentistry Principles and Practice. Philadelphia:Lipincott-Raven 1997.



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FISH FECES REVEALS WHICH SPECIES EAT CROWN-OF-THORNS

Crown-of-thorns starfish are on the menu for many more fish species than previously suspected, an investigation using fish poo and gut goo reveals.

The finding suggests that some fish, including popular eating and aquarium species, might have a role to play in keeping the destructive pest population under control.

The native starfish (*Acanthaster solaris*) is responsible for widespread damage to the Great Barrier Reef. Since 1962 its population has surged to plague proportions on three occasions, each time causing the loss of large amounts of hard coral. A fourth outbreak is currently underway.

Increasing the amount of predation on starfish has long been touted as a potential solution to preventing outbreaks. However, aside from a mollusc called the Giant Triton (*Charonia tritonis*), identifying what eats it has been a challenging task.

Now, a team of scientists led by Dr Frederieke Kroon from the Australian Institute of Marine Science in Townsville, Australia, has applied a genetic marker unique for crown-of-thorns, developed at AIMS, to detect the presence of starfish DNA in fish poo and gut contents.

Over three years, Dr Kroon's team used it on samples taken from 678 fish from 101 species, comprising 21 families, gathered from reefs experiencing varying levels of starfish outbreak.

"Our results strongly indicate that direct fish predation on crown-of-thorns may well be more common than is currently appreciated," said Dr Kroon.

The study, published in the journal *Scientific Reports*, confirms that at least 18 coral reef fish species - including Spangled Emperor (*Lethrinus nebulosus*), Redthroat Emperor (*Lethrinus miniatus*) and Blackspotted Puffer (*Arothron nigropunctatus*) - consume young or adult starfish on the reef.

Among the species were nine which had not been previously reported to feed on crown-of-thorns. These include the Neon Damsel (*Pomacentrus coelisticus*), Redspot Emperor (*Lethrinus lentjan*), and the Blackspot Snapper (*Lutjanus fulviflamma*).

"Our findings might also solve a mystery - why reef areas that are closed to commercial and recreational fishing tend to have fewer starfish than areas where fishing is allowed," said Dr Kroon.

She and colleagues from AIMS worked with researchers from CSIRO Land and Water and managers from the Great Barrier Reef Marine Park Authority to conduct the study.

"This innovative research sheds new light on the extent that coral reef fishes eat crown-of-thorns starfish," said Mr Darren Cameron, co-author of the paper, and Director of the COTS Control Program at the Great Barrier Reef Marine Park Authority.

"A number of the fish species shown to feed on these starfish are caught by commercial and recreational fisheries, highlighting the importance of marine park zoning and effective fisheries management in controlling crown-of-thorns starfish across the Great Barrier Reef."



Dr. Frederieke Kroon looking at a crown-of-thorns starfish on the Great Barrier Reef. Photo credit: D.Westcott/CSIRO

Journal References:

Frederieke J. Kroon, Carine D. Lefèvre, Jason R. Doyle, Frances Patel, Grant Milton, Andrea Severati, Matt Kenway, Charlotte L. Johansson, Simon Schnebert, Peter Thomas-Hall, Mary C. Bonin, Darren S. Cameron, David A. Westcott. DNA-based identification of predators of the corallivorous Crown-of-Thorns Starfish (*Acanthaster cf. solaris*) from fish faeces and gut contents. *Scientific Reports*, 2020; 10 (1) DOI: 10.1038/s41598-020-65136-4



VETAPEDIA REACHES GLOBAL AUDIENCES AND FORMS ITS OWN IDENTITY

The well-known vet exclusive resource dubbed VetAPedia has now landed itself a new home; leaving Animal Emergency Service's website and setting up shop at www.vetapedia.com.au.

Originally envisioned as a place to share free veterinary content with other Australian vets, in less than a year the online platform has gained worldwide membership and interest; sparking the company to separate it from the Animal Emergency Service brand.

"We wanted to bring everyone into our treatment rooms. To give out our protocols on dealing with critical cases - let's just say, an isolated vet in the middle of country Australia who has a diabetic ketoacidosis case on their hands; to give them some guidance," says Dr Rob Webster, founder of Animal Emergency Service and the leader of the team who invented the VetAPedia concept.

"But now, we are being inundated with emails from overseas. Vets are telling us that they need emergency and critical care resources, and they need them fast. It's become bigger than we ever imagined and it's no longer an Animal Emergency Service resource," continues Dr Webster.

"It's a shared collaboration by emergency and critical care vets everywhere, something that belongs to the vet profession as a whole - and not just in Australia."

Such an example of the veterinary profession coming together was during Australia's bushfire crisis; when veterinary colleagues from overseas and in Australia banded together to treat Australia's perishing wildlife.

Dr Steven Epstein and Dr Kate Hopper from UC Davis School of Veterinary Medicine urgently obtained permission from publisher Elsevier to release chapters of the *Small Animal Critical Care Medicine* textbook for vets on the front line treating thermal burns and smoke inhalation.

Port Macquarie Koala Hospital released notes they collated

from the 2006 wildfires to add to the VetAPedia library - giving vets access to assessment, first aid, medications, progress and rehabilitation of wildlife affected by burns.

The *Journal of Veterinary Emergency and Critical Care* (JVECC) then added part 1 and 2 of the journal review on *Serve Burn Injuries* to VetAPedia, giving vets access to burn classification, pathophysiology, diagnosis, therapy, complications, and prognosis information at their fingertips.

The most inspiring part of all of this is the sheer effort of collaboration. The collation of quality resources would not usually happen overnight. However, before morning, all parties had returned their resources to Animal Emergency Service after hearing the country's wildlife were in crisis.

Every resource is passed through a strict peer review process by VetAPedia's Scientific Committee.

Given the natural progression of VetAPedia into a world-wide collaboration hub for vets, Dr Webster says the committee has extended its reach to enable vets everywhere to help save the sickest of pets - and VetAPedia is now taking applications from vets outside of Australia who are interested in joining the VetAPedia Scientific Committee.

"With feedback from vets all over the world - we now know more about what vets need access to. Our vision is to advance the field of emergency and critical care and to ensure all animal patients receive the best standard of medical service."

The all-new VetAPedia platform will give vets around the world different options in how they consume resources (read: videos, PDF downloads, webinars and more to come); and unites the vet community in their common goal of better treatment for small animals, everywhere.

Animal Emergency Service is an after-hours specialised veterinary clinic network providing urgent medical care to pets and wildlife. Established in 2005 there are now four clinics in Queensland, located in Underwood, Jindalee, Carrara and Tanawha. Animal Emergency Service also owns the only privately-owned Pet Intensive Care Unit in Australia, located in Queensland.

DOGS CAN DETECT TRACES OF GASOLINE DOWN TO ONE BILLIONTH OF A TEASPOON

Trained dogs can detect fire accelerants such as gasoline in quantities as small as one billionth of a teaspoon, according to new research by University of Alberta chemists. The study provides the lowest estimate of the limit of sensitivity of dogs' noses and has implications for arson investigations.

"During an arson investigation, a dog may be used to identify debris that contains traces of ignitable liquids - which could support a hypothesis that a fire was the result of arson," explained Robin Abel, graduate student in the Department of Chemistry and lead author of the study. "Of course, a dog cannot give testimony in court, so debris from where the dog indicated must be taken back to the laboratory and analysed. This estimate provides a target for forensic labs when processing evidence flagged by detection dogs at sites of potential arson."

The study involved two dog-and-handler teams. The first was trained to detect a variety of ignitable liquids, while the other was trained primarily with gasoline. Results show that the dog trained on a variety of liquids performed well detecting all accelerants, while the dog trained on gasoline was not able to generalise to other accelerants at extremely low concentrations.

Another outcome of the study was the development of a protocol that can be used to generate suitable ultra-clean substrates

necessary for assessing the performance of accelerant-detection dogs for trace-level detection.

"In this field, it is well-known that dogs are more sensitive than conventional laboratory tests," said James Harynuk, associate professor of chemistry and Abel's supervisor. "There have been many cases where a dog will flag debris that then tests negative in the lab. In order for us to improve laboratory techniques so that they can match the performance of the dogs, we must first assess the dogs. This work gives us a very challenging target to meet for our laboratory methods."

So, just how small a volume of gasoline can a dog detect?

"The dogs in this study were able to detect down to one billionth of a teaspoon - or 5 pL - of gasoline," added Harynuk. "Their noses are incredibly sensitive."

This research was conducted in collaboration with Jeff Lunder, vice president of the Canine Accelerant Detection Association (CADA) Fire Dogs. Funding was provided by the Natural Sciences and Engineering Research Council of Canada (NSERC).

Journal References:

Robin J. Abel, Jeffrey L. Lunder, James J. Harynuk. A novel protocol for producing low-abundance targets to characterize the sensitivity limits of ignitable liquid detection canines. *Forensic Chemistry*, 2020; 18: 100230 DOI: 10.1016/j.forc.2020.100230

MORE PETS HEADED TO VETS IN LOCKDOWN

Pet owners are using the lockdown to focus on the health of their cats and dogs, ensuring routine vet visits are up to date, chronic conditions are monitored, and elective procedures are taking place according to claims data from PetSure, Australia's largest pet insurance underwriter.

With veterinary surgeries remaining open during the lockdown, PetSure has recorded an increase in the number of claims paid out for vet procedures, reflecting the higher number of vet visits taking place. PetSure is the largest insurer of cats and dogs in Australia. Compared with April 2019, claims volumes in April this year were 16% higher. PetSure paid \$17.3 million in benefit reimbursements to customers in April 2020 alone, an increase of 34% from the same time last year.

PetSure CEO, Alexandra Thomas commented, "Anecdotally we know that pets have done well in lockdown thanks to Australians staying home. Now our claims data shows that in the form of increased claims and vet visits: owners were more likely to visit the vet."

Ms Thomas said, "Pet owners have taken care of chronic health issues, attended to pet wellbeing and acted swiftly on acute issues. Evidence of this is the increase in treatment, claims and pet insurance payments for medical and surgical procedures. One upside of working from home may well be that pet owners are able to care for their pet in their recovery so have opted to act on health issues rather than delay them."

Claims data from PetSure also found there has been no increase in respiratory claims since the pandemic was declared, and

no cases of reported COVID-related illnesses. The latest data found that respiratory claims represented 0.2% of claims in dogs and approximately 0.05% of claims in cats. Compared with this time last year, overall there has been a slight decrease in the total number of claims relating to respiratory infections in dogs and cats.

Ms Thomas added, "We have been monitoring diagnoses relating to respiratory infections such as pneumonia, coughing and fever in both dogs and cats. These conditions have actually decreased slightly."

According to the claims data the ratio of treatment across standard, specialist and emergency clinics remained consistent during the COVID-19 lockdown. Standard vet practices account for 87% of claims, followed by treatment at specialist referral clinics (11% of claims) and emergency clinic treatment (2% of claims).

Ms Thomas concluded, "During a stressful time for many Australians, one silver lining is that pet owners have had more time with their pets, been able to get them to the vet in increasing numbers and use their pet insurance to help pay for vet treatment."

"Pet insurance exists to help pet owners access quality treatment when it's needed - these claim statistics suggest pet owners have been able to do exactly that during lockdown."

BREAKTHROUGH DISINFECTANT IDEAL FOR VET CLINICS

Ongoing cleaning and disinfecting our workplaces are the new norm when it comes to the health of both employees and customers. Veterinary clinics are no different and recent COVID-19 events have seen the veterinary industry evolve with new service models in addition to enhanced hygiene and biosecurity protocols applied in customer contact areas such as waiting and consulting rooms.

This crisis has also seen the rapid commercialisation of new technologies such as telemedicine and the introduction of new disinfection technologies to enhance biosecurity programs for the veterinary industry.

Z-71 Microbe Shield, developed by Zoono in New Zealand, is a unique disinfectant that provides extended duration of efficacy against common germs through its mechanically based surface protectant properties.

Z-71 Microbe Shield is one of 15 disinfectants recently approved by Australia's Therapeutic Goods Administration for use against COVID-19, bacteria and germs on hard surfaces.

The TGA approval for Zoono comes on the back of research conducted in the United Kingdom against a COVID-19 surrogate, feline coronavirus, where the Z-71 Microbe Shield was able to reduce the viral levels by over 99.99%.

These approvals have seen Australian companies and others globally adopt this new technology. The London Underground, New Zealand ferries, Dallas Love Airport and G8 Education, which operate over 500 childcare centres in Australia, are just a few of the organisations to adopt the Z-71 technology to enhance hygiene practices.

Regional veterinary services provider Apiam Animal Health, having recently completed extensive trials using Z-71 Microbe Shield, was one of the first Australian veterinary companies to adopt this technology across its network.

With the outbreak of COVID-19, Apiam implemented enhanced biosecurity protocols into its 21 veterinary clinics using this revolutionary surface protectant, applied both as part of weekly sanitising all surfaces using a controlled fogging process and through daily application of high contact surfaces.

"What makes Microbe Shield different is that data demonstrates that once sprayed onto a dry surface it protects against many bacterial, viral and fungal pathogens for up to 30 days," said Apiam Managing Director Dr Chris Richards.

"Veterinary clinics are an essential service and we wanted to ensure that we make it as safe as possible for our staff and clients. The biggest difference between this sanitiser and others on the market is that continues to remain effective over time by killing pathogens through mechanical rather than chemical action."

Dr Richards said hand spraying was also an effective and time efficient way of protecting high traffic areas as well as touch points such as door handles, phones and desks.

"Most chemical sanitisers will kill pathogens pretty much straight away but the fact that it has been tested to be effective against many germs for up to 30 days on surfaces using a mechanical mechanism is a major breakthrough," he said.

"The safety of the product is also imperative and Zoono was able to provide extensive safety data from both toxicity and dermatological tests."

"We were initially attracted to the Zoono products for use by our network of vets to sanitise and protect piggeries, poultry sheds and livestock systems, as well for use in biosecurity programs with the technology. But we are now using it in the clinics as well."

Trial results were so compelling that Apiam acquired the distribution rights for the livestock and animal health industries in Australia and the US last November for the disinfectant technology. It is now available for other veterinary clinics to use to assist in the protection of their employees and customers.

Dr Richards said there has been strong demand from both Apiam clients and the greater animal health community for the use of the product, and that Apiam has developed the training material required so that other veterinary clinics, essential businesses and workplaces can also improve their biosecurity and hygiene systems.

The Z-71 technology is also available as a hand sanitiser which, despite not containing alcohol, has also been successfully tested in the same UK laboratory against the COVID-19 surrogate.

Further information on the technology can be accessed at zoonovet.com.au

Z-71 Microbe Shield is available in 150ml and 250ml spray bottles as well as 5-litre bulk refill containers. Zoono Hand Sanitiser is available in 50ml, 150ml and 500ml pump packs as well as a 5-litre bulk pack. Both products are available from Provet Victoria or countryvet.com.au



RESCUE AWARDS IS BACK TO ENCOURAGE AND INSPIRE RESCUE WHEN NEEDED MOST

THE COMPANION ANIMAL RESCUE AWARDS RETURNS FOR ITS THIRD YEAR TO CELEBRATE AND INSPIRE RESCUE GROUPS AND ANIMAL SHELTERS TO CONTINUE THEIR EFFORTS IN SAVING COMPANION ANIMALS, PARTICULARLY DURING THESE CHALLENGING TIMES. THIS YEAR, JETPETS IS AGAIN THE PLATINUM RESCUE HERO AND NAMING PARTNER.

The Rescue Awards is a national for purpose program managed by Pets4Life, an independent education resource for cat and dog guardians and those thinking of getting a pet. The mission of the Rescue Awards is to celebrate and recognise achievements in the rescue, rehabilitation and rehoming of companion animals in Australia. It is the platform to showcase excellence and innovation, thereby raising the standards of rescue groups and animal shelters nation-wide.

"The Rescue Awards is more important than ever to put the spotlight on the sector. While rescue organisations are experiencing some of the highest ever adoption rates - PetRescue website has seen more than 12,000 pets adopted in just six weeks - these organisations are also struggling from the financial impacts of the COVID-19 pandemic following the bushfires," said Rescue Awards founder and pet adoption advocate Cathy Beer.

Every year, approximately 190,000 pets remain unclaimed in Australia's pounds and shelters, and thousands of volunteers support over 1,000 rescue groups and animal shelters across Australia¹. The Rescue Awards recognises the dedication of staff and volunteers who work tirelessly to help rescue pets find homes.

"Our past winners and finalists say the recognition by the Rescue Awards gives their staff and volunteers the motivation to 'keep calm and carry on' rehoming surrendered and abandoned pets every day in a challenging environment," said Cathy.

In 2020, the Rescue Awards is building on the success of 2019 when over 1,000 entries were received. Cathy reveals exciting changes to this year's program in her video message, including a new Ambassador plus new Judges, Categories and Supporters. She also thanks animal lovers across the country for helping to make a difference by adopting or fostering a pet.

Cathy is very excited to announce two new Categories.

She said, "The 'Refuel Digital Technology Award' is for rehoming organisations. The use of digital technology has enabled rescue groups and shelters to continue their great work despite natural disasters and the current pandemic lockdown. The Drontal® Foster Carer Story is for thousands of volunteer foster carers around the country looking after companion animals until they find a new home."

Jetpets Managing Director Sandy Matheson said, "For the third consecutive year, Jetpets is proud to be the Platinum Rescue Hero and Naming Partner. In wanting to support and recognise the remarkable work being done by so many individuals and rescue groups throughout Australia, we are thrilled to come on board again as the Platinum Partner for the Jetpets Companion Animal Rescue Awards. I'm looking forward to being involved and ultimately congratulating the winners of the various award categories."

Ambassador The Rescue Awards 2020 is thrilled to announce a new Ambassador, Lara Shannon, Certified Dog Trainer, Animal Welfare Advocate and Host of Channel 10's Pooches at Play. Lara shares her enthusiasm for the Rescue Awards in her video message. Rescue Award Categories

The Rescue Awards 2020 has 10 Categories with one winner for each category.

Award categories 1 - 8 are for industry. Category 9, the 'Advocate® People's Rescue Story' is for Aussie pet guardians who have adopted a pet and category 10 is the 'Drontal® Foster Carer Story' for foster carers of companion animals waiting for their forever home.

"Pet adoption changes lives for the better," said Cathy. "This year we're looking for 1,000 heart-warming stories from pet adopters and 500 inspiring stories from foster carers about how their adopted/foster pet has transformed and changed their human's life."



Photo credit: Jo Lyons Photography, the Rescue Awards Official Photographer



Photo credit: Jo Lyons Photography, the Rescue Awards Official Photographer



Rescue Founder Cathy Beer and Ambassador Lara Shannon.
Photo credit: Jo Lyons Photography, the Rescue Awards Official Photographer

Jetpets Companion Animal Rescue Awards 2020 categories

1. Outstanding Rescue Group
2. Outstanding New Rescue Group
3. Outstanding Animal Shelter
4. Outstanding Council Animal Shelter
5. Innovation in Rescue
6. Community Education and Outreach Program
7. Volunteer of the Year
8. Refuel Digital Technology Award (new)
10. Advocate® People's Rescue Story
11. Drontal® Foster Carer Story (new)

Judges

The Rescue Awards is thrilled to announce 20 judges who bring expertise in companion animal welfare, rescue and sheltering, veterinarians, compassion fatigue, digital technology and animal behaviour.

The Rescue Awards wishes to thank the judges for donating their time and expertise.

1. *Tim Vasudeva*, Director of Corporate Affairs at Animals Australia
2. *Dr Alison Shen*, Veterinarian and Co-star in the TV series Bondi Vet Coast to Coast*
3. *Nell Thompson*, Coordinator for Getting 2 Zero
4. *Emeritus Professor Jacquie Rand*, Executive Director & Chief Scientist, Australian Pet Welfare Foundation*
5. *Vickie Davy*, Co-Founder & joint CEO of PetRescue
6. *Dr Anthony Bennett*, Veterinarian, Equine Dentist & Royal Easter Show panelist
7. *Dr Jo Righetti*, PhD Animal Behaviourist, Pet Problems Solved*
8. *Dr Vanessa Rolf*, Compassion Fatigue Therapist*
9. *Brooke Rankmore*, CEO at Animal Management in Rural and Remote Indigenous Communities*
10. *Sandy Matheson*, Founder & Managing Director of Jetpets
11. *Dr Anne Fawcett*, Animal Welfare Veterinarian
12. *Dr Michael O'Donoghue*, Small Animal Veterinarian and Co-Founder of 'People and Pets'
13. *Anne Boxhall*, Animal Welfare Advocate with 28 years' experience in sheltering and rescue
14. *Ryan Jones*, Founder and CEO of Refuel Creative*
15. *Brittany Bloomer*, International TV Presenter and Founder of charity Pound Paws*
16. *Annette Hughes*, Publisher of Where Pets Are Found*
17. *Elliot Chapman*, Customer Success Manager, HubSpot*
18. *Tara O'Connell*, Pet Diaries App Creator*
19. *Dan White*, Senior Brand Manager, Bayer Animal Health (categories 9 and 10)
20. *Cathy Beer*, Founder of Pets4Life (categories 9 and 10)

* New judges in 2020.

OPEN FOR ENTRIES

Entries open online now until midnight on 19 July 2020.

To enter, visit www.rescueawards.com.au and follow the links.

To watch a short video to find out what our judges and past winners have to say about the Jetpets Companion Animal Rescue Awards head to www.youtube.com/watch?v=2nq4mHG2uKQ&feature=youtu.be.

For updates on the Rescue Awards program, please visit www.rescueawards.com.au, sign up to the e-newsletter or follow the Rescue Awards on Facebook, Twitter and Instagram. [#jetpetsrescueawards2020](https://www.instagram.com/jetpetsrescueawards2020)

UNWANTED BEHAVIOUR IN DOGS IS COMMON, WITH GREAT VARIANCE BETWEEN BREEDS

All dog breeds have unwanted behaviour, such as noise sensitivity, aggressiveness and separation anxiety, but differences in frequency between breeds are great. Various unwanted behaviour traits often occur simultaneously, as indicated by a study recently completed by Professor Hannes Lohi's research group from the University of Helsinki.

Unwanted behaviour occurs in many pet dogs.

"In the dataset of nearly 14,000 dogs that we have compiled, one of the largest in the world, unwanted behaviour occurred in 73% of the dogs. One such behaviour trait is noise sensitivity, found in one-third of the dogs," Professor Hannes Lohi says.

Lohi's research group investigated the prevalence of seven unwanted behaviour traits: noise sensitivity, including thunder, fireworks and shots; fearfulness of humans, other dogs and unfamiliar locations; fear of surfaces and heights; inattention and impulsivity; compulsive behaviour; aggressiveness; and separation anxiety. In addition to noise sensitivity, fearfulness and fear of surfaces and heights were very common traits.

As in dogs, so in humans

The study also looked into the link between individual traits. As observed in prior studies, fearfulness and aggressive behaviour are often comorbid. Some of the findings were new and surprising.

"We discovered an interesting connection between impulsivity, compulsive behaviour and separation anxiety. In humans, obsessive-compulsive disorder (OCD) often occurs together with attention deficit and hyperactivity disorder (ADHD), but this is the first time the same has been seen in dogs," says doctoral candidate Milla Salonen.

The behaviour research carried out by the group has another goal: to understand what underlies human mental health problems. Physiologically and behaviourally, dogs are similar to human beings. Furthermore, unwanted behaviour is natural in dogs who also share the same complex social environment with humans.

"With the help of this project and data, we will continue investigating how good a model species the dog is in research focused on human mental health problems. Our previous genetic research pointed to the same genomic areas in fearfulness and noise sensitivity," Professor Lohi says.

Breed-specific and significant differences in behaviour

The prevalence of unwanted behaviour traits was compared between the 15 breeds with the most responses received in the related survey, with significant differences identified between breeds.

"The problems appear to be quite breed-specific. For example, in Border Collies we observed more compulsive staring and light/shadow chasing, behaviours that occurred more rarely in all other breeds," Lohi says.

Differences in the prevalence of behaviour traits between individual breeds were manifold.

"One of the biggest differences among the breeds was identified in fearfulness of unfamiliar people, in which there was an 18-fold difference between the most timid breed and the bravest breed, the Spanish Water Dog and the Staffordshire Bull Terrier," Salonen explains.

Behavioural research aims to increase canine welfare. Many unwanted behaviour traits, such as fearfulness and noise sensitivity, can cause intense stress in dogs. Behavioural problems may result in the owner giving up the dog.

"Our findings indicate that unwanted behaviour seems to be inherited, which means that, through careful breeding that relies on suitable behaviour indicators, the prevalence of such behaviour traits could be decreased. This would improve the quality of life of not only the dogs, but their owners too," Professor Lohi states.



Journal Reference:

Milla Salonen, Sini Sulkama, Salla Mikkola, Jenni Puurunen, Emma Hakonen, Katriona Tiira, César Araujo, Hannes Lohi. Prevalence, comorbidity, and breed differences in canine anxiety in 13,700 Finnish pet dogs. *Scientific Reports*, 2020; 10 (1) DOI: 10.1038/s41598-020-59837-z

FROZEN THE WAY FORWARD FOR MODERN DOG BREEDING PUPPIES BORN USING 20-YEAR-OLD FROZEN SEMEN

Artificial insemination is becoming commonplace for Australian breeders, according to detector dog trainer and registered breeder of working German Shepherds and Dobermans, Kris Kotsopoulos.

The modern breeding technique of freezing semen is used because it enables breeders to access genes that are normally unavailable, due to the original dog passing away young, or it is not for sale or to preserve desirable genes.

"Using frozen semen from dogs born years ago is more common now, particularly among breeders of working dogs, but it wasn't when we started breeding and training dogs in the 1980s. We can preserve traits now that have been suppressed in next generations," said Kotsopoulos, co-director of Detector Dogs Australia and managing director of Performadog Ultra Premium pet food, scientifically formulated to enhance pets' physical and emotional states.

Kotsopoulos has recently proved this technique is successful by using frozen semen from a dog born in 1989 to create a new litter of German Shepherd puppies. The semen sample cost around \$16.5K, including semen storage and the insemination procedure, he said.

The donor dog, Hassan v Gruntal DDR, had strong character traits that were a must-have for future generations.

"Hassan had a very stable temperament. He was open, relaxed and great with people," said Kotsopoulos. "He also had an intense grip and prey drive, which means he was suitable for engaging with training aids and possessed an assertive character for policing scenarios."

Born in Berlin, Germany, Hassan travelled to Belgium and then South Africa before settling with Kotsopoulos in Melbourne, Victoria where his semen was frozen and stored at Monash Vet Clinic.

"There are AQIS requirements to be met before semen collection and all shipping is handled by a shipping agent," said Kotsopoulos. "At the Monash Vet Clinic, I have about 20 samples frozen, from both German Shepherds and Dobermans."

Hassan's latest creations have already gone to good homes in Victoria and NSW, supported for life by Performadog Ultra Premium Dog Food. Kotsopoulos is keeping one of the puppies - a female pup yet to be named - for breeding and detector dog training.

"She has perfect black sable pigment and functional construction, which is desired and not the over-angulated style we have in modern German Shepherds," he said.

"She also has an unbelievable retrieval instinct - she could chase a ball and return it at seven weeks of age, something very difficult to see in many German Shepherds. She's also very cheeky and has already put holes in my jeans!"



Performadog Ultra Premium Dog Food Managing Director Kris Kotsopoulos and his German Shepherd puppy born from 20-year-old frozen semen.

NEW CHAIR FOR WSAVA VACCINATION GUIDELINES GROUP

Dr Richard Squires BVSc (Hons) PhD DVR Dipl. ACVIM Dipl. ECVIM-CA GCertEd, Associate Professor in Companion Animal Medicine, James Cook University, North Queensland, Australia, has been announced as the new Chair of the

World Small Animal Veterinary Association's (WSAVA's) Vaccination Guidelines Group (VGG).

The VGG comprises a team of experts from around the world focused on providing evidence-based scientific advice to the global veterinary profession on optimum vaccination practice for dogs and cats. As part of its work to promote best practice in vaccination, it has produced:

- Three editions of the WSAVA Global Guidelines on Vaccination for Veterinarians
- Two editions of the WSAVA Vaccination Guidelines for Pet Owners and Breeders
- Regional Guidelines for veterinarians in Asia, together with soon-to-be launched Guidelines for veterinarians in Latin America.

Following graduation from the University of Bristol, UK, Dr Squires worked in general practice before undertaking postgraduate clinical training at the Universities of Cambridge and Pennsylvania and research training at Glasgow. His PhD was awarded for research in which he sought a retroviral aetiology for canine lymphoma. He held faculty positions at the Universities of Liverpool, Pennsylvania, Wisconsin and at Massey University prior to joining James Cook University in 2007. He is a Diplomate of both the American and European Colleges of Veterinary Internal Medicine and holds the Royal College of Veterinary Surgeons' Diploma in Veterinary Radiology.

Dr Squires has been a member of the VGG since 2012 and has been actively involved in the creation of its Global Guidelines and its more recent Regional Guidelines. While some of its work for 2020 has been postponed as a result of the COVID-19 pandemic, VGG Committee members are working on the creation of online CE and preparing for a full review of the WSAVA's Global Vaccination Guidelines. He succeeds Emeritus Professor Michael J. Day, who chaired the VGG from 2009 until March 2020.

Commenting on Dr Squires' new role as VGG Chair, Dr Shane Ryan, WSAVA President, said "Thanks to Michael Day's



exceptional leadership, VGG Guidelines are transforming vaccination practice and, in so doing, supporting the welfare of millions of companion animals around the world. We are delighted to welcome Richard to his new role of VGG Chair and look forward to working with him and the rest of the VGG team in the months ahead."

Dr Squires said "I am delighted and honored to have been asked to continue Michael Day's outstanding work as Chair of the WSAVA VGG. I look forward to working with the WSAVA leadership, with VGG members and with our partner MSD Animal Health on the next phase of our work."

MSD Animal Health has been a committed sponsor of the WSAVA Vaccination Guidelines Group (VGG) since its inception in 2006 and is now a Diamond Partner of the WSAVA.

The WSAVA represents more than 200,000 veterinarians worldwide through its 113 member associations and works to enhance standards of clinical care for companion animals. Its core activities include the development of WSAVA Global Guidelines in key areas of veterinary practice, including pain management, nutrition and vaccination, together with lobbying on important issues affecting companion animal care worldwide.

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BECAUSE EWE'D FEEL IT! HUMANE AND 'CONSUMER FRIENDLY' TAIL DOCKING SOLUTION FOR LAMBS

WORLDWIDE, MORE THAN 100 MILLION LAMBS ARE CASTRATED AND TAIL DOCKED EACH YEAR WITHOUT PAIN RELIEF. NUMNUTS' PATENTED TECHNOLOGY IS A PRACTICAL, FARMER-FRIENDLY METHOD FOR ALLEVIATING THE PAIN SUFFERED WHEN LAMBS GO THROUGH THESE HUSBANDRY PROCEDURES.

If you are currently doing nothing in terms of pain relief during lamb marking, then it's time to start doing something, according to Dr Alison Small, CSIRO.

"We can't obliterate pain for humans yet and we certainly can't obliterate it for animals, but we can make a difference to the level of pain experienced," she said.

Alison, who works on, meat quality and animal welfare standards, has been investigating various pain relief options for livestock, including Numnuts®.

Product development

Numnuts® combines a ring applicator with a local anaesthetic injecting device, enabling the operator to inject pain relief directly where and when its required.

Robin Smith, the Numnuts® inventor, whose father and grandfather were both vets, moved his family from Scotland to Australia in 2019 to pilot launch the product ahead of its full commercial release this year.

Thanks to development funding from MLA, Australia is the first country in the world to have access to Numnuts and will have had two lambing seasons under its belt before the device is available in other countries.

"We had three major design criteria for developing Numnuts®," Robin said. "It had to be practical, safe and quick to use."

The aim was to develop a tool which would make it straightforward and safe for a farmer to administer local anaesthetic at marking to up to a thousand lambs a day.

Robin is an engineer by training but has a strong interest in animal welfare and a pretty good pedigree in the sheep industry. (His

veterinarian father Dr David Smith led the team that developed Barbervax, the novel vaccine for Barbers Pole worm and Robin designed the production system for the vaccine.) He said that while Senesino is a design engineering firm, their philosophy was to approach every problem from the perspective of the person who will use the product.

"We're not interested in technology for its own sake, we wanted the simplest solution that did the job well, yet like most things that are simple it took many years of trial and error to find it"

"In developing the Numnuts® tool, we looked at the angle and depth of needle attack, the dose of anaesthetic and the ergonomics of the design. We have developed a more ergonomic and less RSI-inducing tool than other ring applicators as, once fully expanded, ours takes very little force to keep it open to apply the ring. We also put a lot of engineering into making the additional action of squeezing the trigger to deliver the local anaesthetic as simple as possible."

The local anaesthetic delivered by Numnuts® is analogous to the injection a patient receives at the dentist.

"The sheep industry has post-marking pain relief analgesics available to it, but this approach didn't sit well with us." "You don't want your dentist drilling in your mouth without being anaesthetised first," he pointed out.

"The pain generated from a ring - on the tail or on the scrotum - takes a minute or two to become an acute, sharp, throbbing pain which lasts for about 60mins. It's that ouch, ouch, ouch feeling. I often ask farmers at field days to put one on their finger so that they can appreciate what it's like. Most are fine with it for 60secs, but I've not met one who can keep it on for more than 3 minutes!"

The NumOcaine® local anaesthesia works during this period,

"We can't obliterate pain for humans yet and we certainly can't obliterate it for animals, but we can make a difference to the level of pain experienced"

Dr Alison Small, CSIRO



kicking in quickly and masking the pain during its most intense 60min window. Using a combination of Numocaine and an analgesic (e.g. Bucalgesic) provides the most prolonged pain relief.

"Although we've called it Numnuts®, it's equally relevant for tail docking."

"The efficacy on the tails we have shown is superb and we are confident we have developed the most humane tail docking tool in the world."

If used on all lambs during marking, and assuming equal numbers of rams and ewes, only a third of the applications of Numnuts® would be to testicles; the other two thirds would be to tails. Robin is now on a mission to try to move the industry away from using the hot knife which as he says "irrespective of how fast it is to use, the big problem, with the hot knife on the tails, is that it is brutal. To the consumer focused market who are becoming more interested in farm welfare, the hot knife with no pre-surgical analgesia, looks brutal, sounds brutal, and must feel brutal. On windy days the blade will often fail to fully cauterise the wound.

Proven effective pain relief

Alison Small said that in the trials conducted by CSIRO there was a significant reduction in the number of lambs displaying pain behaviour immediately after lamb marking procedures when Numnuts® was used.

"With any assessment of pain, there is a massive grey scale," she said. "Some lambs are very stoic and will just 'grit their teeth' and bear it, whereas others will throw a tantrum and roll around on the ground. But with local anaesthetic there is a noticeable decline in the pain behaviour displayed."

The researchers also found that in lambs marked using Numnuts®, there was a reduction in mismothering afterwards.

"We timed the lambs going back to their mums after marking," Alison said. "In the lambs that had rings applied without Numnuts®, 30-40% had not found their mothers after three minutes. Whereas in the lambs that had been marked using Numnuts®, only 10-20% had not found their mothers after three minutes. In our control group, with no rings, all lambs found their mothers within three minutes."

Alison said it would be good to look at lamb losses, but the practicalities make doing so are difficult due to the large mob size needed to counter the many complicating factors associated with lamb survival. What is already clear though, is that producers who have been involved in the beta testing of Numnuts® are keen to get hold of it because they have noticed a benefit.

"Those who have tried it, are very positive," Alison said. "One of the consistent pieces of feedback I have had is that things seem quieter in the yards after marking and there is a feeling that the lambs are easier to take back to the paddock."

Further research is planned with CSIRO looking to engage with production animal Vets across Australia to take part in an MLA funded producer demonstration project.

Research and development findings

Robin Smith said up to a 70% improvement in pain management could be expected by using Numnuts®. "But the flipside of that is that 30% of lambs will still display signs of acute pain," he said.

"Yet the real vindication of our approach has come from the 200,000 lambs who have received Numnuts during 2019, all the farmers who I have spoken to so far can visibly see the

improvement in the lambs a few minutes after coming out of the cradle. They tell me time and time again they are easier to move back to the paddocks as they haven't been through the trauma of the ischemic acute pain and some are reporting less scouring 2-3days later (a sign of stress in young animals)

"Like any scientific endeavour, this is a journey. It's not an end point. We'd love to improve the pharmacokinetics, and develop a novel anaesthetic formulation for covering fast acting acute pain combined with a chronic pain analgesia. The challenge is this process usually takes 7 years from start to commercial readiness, and the farming industry wants solutions now. We'd love to talk to vets or pharmaceutical companies who would like to experiment using our delivery platform for other drugs"

The anaesthetic in the bespoke Numnuts® cartridge, NumOcaine®, is a Schedule 4 drug so is only available through a veterinarian.

"An important side benefit of what we have created, is enabling vets to (re)connect with sheep producers, as veterinary care is sadly lacking on many sheep farms in rural Australia."

Robin said a single cartridge will last for about 40 lambs (if both tails and testicles are ringed) and most commercial producers who mark ~1000 per day will need to change the bottle about once every 15-20 minutes.

The engineering team have developed a special 'quick change cartridge' that is much simpler to use than broaching and tangling with a draw-off tube and allows easy changeover of the anaesthetic cartridges and straightforward replacement of the injection needles. This cartridge keeps NumOcaine® distinct from other local anaesthetics on the market. In addition it prevents the anaesthetic fluid being drawn up by syringe and needle

ensuring that NumOcaine can only be dispensed by the Numnuts applicator. Robin said "this was an important issue raised by vets who were concerned about misuse of the local anaesthetic for other operations that are acts of veterinary surgery"

Marking contractors and farmers involved in the trials have indicated it has proven relatively easy for people to adjust to using the Numnuts® device.

"In our trials, about one in every 100 injections into the tail puts the ring on the bone instead of in the gap between the knuckles," Robin said. "Our observations have been that most farmers are docking tails too short when compared to best practice Vet guidelines of below at least the 3rd joint" (<http://www.flyboss.com.au/management/tail-length.php>) The 'engineering' of the Numnuts® device won't allow it to discharge into bone, so when operators hit bone, they need to readjust the positioning. That makes them think about where they need to put the ring and introducing a feedback loop, they need to look out for the knuckles and that may improve tail length."



LEADING PET DERMATOLOGIST DR DANI HOOLAHAN JOINS PETSURE AS NEW CHIEF VETERINARY OFFICER

Bringing a mix of practicing clinical and commercial experience in the pet sector as Zoetis' former Veterinary Operations and Diagnostics Associate Director, PetSure is pleased to welcome its new Chief Veterinary Officer, Dr Dani Hoolahan.

Owner and active practitioner at The Veterinary Dermatology Clinic based in multiple locations on the East Coast of Australia, Dr Hoolahan will play a key advisory role at PetSure, working closely with the veterinary industry to help support pet parents and veterinarians.

"Throughout my career, I've seen how pet insurance allows veterinarians to practice a higher level of veterinary medicine where cost is not the main driver of treatment decisions- resulting in better outcomes for pets and their owners, as well as more satisfying and valuable work for vets" Dr Hoolahan said.

"As a practising vet and clinic owner, I see the difference insurance makes to animal welfare, as well as to vets who can be deeply affected by limited treatment options for their patients due to financial reasons. I'm keen to work together with the pet insurance industry and vets to improve things. Only around 6% of Australian pets are insured with dedicated comprehensive pet insurance- no one wants to think about their pet in pain or medical trouble, but many of the remaining pet carers are not willing or able to fund expensive treatments if things go wrong.

"I'm looking forward to helping educate pet parents during my time at PetSure, as well as continuing to work closely with the

veterinarians, who are the heart and soul of the industry."

PetSure CEO Alexandra Thomas said "Our top priority, and reason for coming to work, is pet welfare, followed closely by supporting pet carers and vets, so it's very important to us to have a highly experienced and practicing vet onboard to advise and contribute to our offering. We are very pleased to welcome Dr Dani and look forward to adding her drive and passion to the team."

Graduating from Murdoch University in Perth, WA with a Bachelor of Veterinary Surgery in 2007, Dr Hoolahan began her career in small animal general practices across both Sydney, NSW and Portland, Oregon, before pursuing her passion for dermatology.

Dr Hoolahan completed a dermatology residency at The William R. Pritchard Veterinary Medical Teaching Hospital at the University of California before moving back to Australia to establish a speciality dermatology practice.

Whilst at PetSure Dr Hoolahan will continue to run and work in her practice The Veterinary Dermatology Clinic, which specialises in allergic skin and ear disease, chronic infections, immune mediated skin disorders, hormonal skin disease, and nail and nail bed disease across the Australian Capital Territory, New South Wales, Victoria and Tasmania, as well as consult for Zoetis.

Outside of work Dr Hoolahan is a proud pet parent of a Lykoi kitten, a Domestic Shorthair cat and three Labradors, and couldn't imagine a life without pets.

TIPS TO AVOID GETTING SCAMMED WHEN LOOKING FOR A LOCKDOWN PUPPY

Australians have lost nearly \$300,000 to puppy scams this year, and scammers have been particularly targeting those seeking a furry companion during social isolation.

Scamwatch has seen a recent spike in puppy scams and in April reports were almost five times higher than the average, with losses on track to exceed the 2019 total of \$360,000.

"A lot of people are stuck at home and going online to buy a pet to help them get through the loneliness of social isolation," ACCC Deputy Chair Delia Rickard said.

"Unfortunately the rush to get a new pet and the unusual circumstances of COVID-19 makes it harder to work out what's real or a scam."

Scammers set up fake websites or ads on online classifieds and social media pretending to sell sought-after dog breeds and will take advantage of the fact that you can't travel to meet the puppy in person. The scammer will usually ask for up-front payments via money transfer to pay for the pet and transport it to you.

"Once you have paid the initial deposit, the scammer will find new ways to ask for more money, and scammers are now using the COVID-19 pandemic to claim higher transportation costs to get across closed interstate borders or additional fees for 'coronavirus treatments,'" Ms Rickard said.

"Unfortunately once you make the payments, the seller will cease all contact."

The most common breeds reported were Cavoodles and French Bulldogs and most people contacted the scammers via an email address they found online.

"The safest option is to only buy or adopt a pet you can meet in person and if you cannot do that during the current lockdown restrictions, consider putting the search on hold," Ms Rickard said.

"Scam websites can look quite convincing, so try not to fall for the adorable puppy pictures they post, and remember, if the price looks too good to be true, it probably is."

"Research the seller by running an internet search using the exact wording in the ad and do a reverse image search for pictures of the specific puppy, as you're likely to be dealing with a scammer if you find matching images or text on multiple websites," Ms Rickard said.

"If you are in doubt, seek advice from a reputable breeders association, vet or local pet shop."

"If you think you have been scammed, contact your bank or financial institution as soon as possible," Ms Rickard said.

More information on coronavirus scams is available on the Scamwatch website www.scamwatch.gov.au/types-of-scams/current-covid-19-coronavirus-scams, including how to make a report and where to get help.

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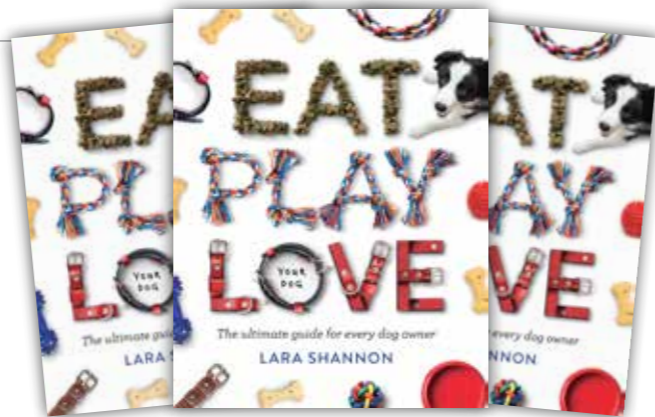
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EAT, PLAY, LOVE (YOUR DOG) A NEW BOOK FROM LARA SHANNON



Eat, Play, Love (Your Dog) is the book that every dog owner needs, to provide their dog with the healthiest and happiest life possible. Author Lara Shannon has drawn upon her many years of working (and playing!) with dogs as a certified dog trainer and pet food nutritionist, and through her TV show Pooches at Play. Her book is the essential go-to guide covering everything you need to know about caring for your dog from puppyhood until end of life.

Divided into three handy chapters - Eat, Play and Love - Lara walks first time pet owners through diet, stimulating games and how to generally care for your pet as well as teaching old dog owners new tricks like how to address behavioural issues and what healthy snacks you can make at home.

Lara is dedicated to promoting responsible pet ownership and pet adoption through her charitable endeavours to help drastically reduce the number of dogs and cats that end up in pounds and animal shelters each year. In light of the coronavirus, animal shelters have seen a surge in pet adoption over this period but prospective owners need to be prepared to take on the responsibility of a pet for the long term. There's advice for anyone considering adopting or fostering, including picking the right

dog for your lifestyle (an ever important factor especially when working from home is only temporary for many of us).

With loads of cute imagery available, including photos of Lara's best furry friend Darcy, this would make for a wonderful and timely feature.

About Lara Shannon

A passionate animal welfare advocate and certified dog trainer, Lara Shannon has been a regular on Australian TV and radio stations for the past two decades. In 2016, Lara created her show Pooches at Play, a lifestyle TV show all about dogs that airs nationally on Channel 10. Lara also manages the associated website PoochesatPlay.com, runs her own dog training and boarding business in Melbourne's bayside area, and is an Ambassador for Second Chance Animal Rescue. Never far from her side is her cheeky pet 'Dynamite Darcy', who Lara adopted in 2017 and has embraced his canine co-host position at Pooches at Play with great gusto!

Eat, Play, Love (Your Dog) is available in all good bookstores for \$29.99 RRP

DR CLAIRE'S LOVE YOUR DOG BOOK HITS THE SHELVES!



Being a responsible and educated dog owner is no easy task. Owners often feel overwhelmed trying to make the right decisions for their cuddly canine, and that's no surprise when they are faced with difficult choices regarding pet insurance, vaccinations, diet, surgery, medical procedures and so much more.

This book helps owners make sense of all that and supports them in truly being their dog's best friend. The expert and user-friendly advice from a practicing Australian vet includes: a complete canine care guide following the life stages of a dog; practical advice on all aspects of caring for your furry friend; canine behaviour and training; and coverage of the common canine diseases.

This expert and user-friendly book supports owners in truly being their dogs' best friend. Dr Claire, a practicing Australian vet, advises on: the life stages of your dog; all aspects of caring for your furry friend, including pet insurance, vaccinations, diet and general health; behaviour and training; common canine diseases; and so much more.

About Dr Claire:

Dr Claire, animal lover, mum and veterinarian, has always been fascinated with the connection and love shared between pets and their owners. Based on the Gold Coast, she studied Veterinary Science at the University of Queensland and also gained a Certificate of Veterinary Public Health from the University of Sydney. Dr Claire is passionate about community, connection and ensuring a healthy, long and happy life for our pets. She believes that connecting on an emotional level with pet owners in the consult room is essential in providing first class veterinary care - a belief that led to her write her first book, Love your Dog. She regularly appears as a specialist commentator on radio and television and has a strong following on social media.

Dr Claire's Love Your Dog is available in all good bookstores for \$39.99 RRP or online at www.booktopia.com.au

SURVEY IDENTIFIES POTENTIAL SEPARATION-RELATED PROBLEMS IN CATS

The first questionnaire survey to identify possible separation-related problems in cats found 13.5 percent of all sampled cats displayed potential issues during their owner's absence, according to a study published recently in the open-access journal PLOS ONE by Daiana de Souza Machado, from the Universidade Federal de Juiz de Fora, Brazil, and colleagues.

Though many studies have been conducted on owner separation problems in dogs, little work has been done to assess potential separation-related problems in cats. Despite the common belief that cats are happy being left alone for long periods of time, recent studies in cats and their owners suggest that pet cats are social and develop bonds with their owners.

In order to assess separation-related problems in cats, de Souza Machado and colleagues developed a questionnaire for use with cat owners. Based on surveys in similar studies with dogs, the questionnaire asked owners to provide basic information on each cat; describe whether their cat displayed certain behaviors when the owner was absent; and describe themselves and their cat interactions, as well as the cat's living environment. The questionnaire was given to 130 owners of adult cats living in the city of Juiz de Fora in Minas Gerais, Brazil, for a total of 223 completed questionnaires (one per cat).

After assessing and categorising responses for each category, the authors statistically analysed their results. The data showed 13.5 percent of the sampled cats (30 out of 223) met at least one of the criteria for separation-related problems, with destructive behaviour most frequently-reported (present in 20 of the 30 cats). The other behaviours or mental states identified were: excessive vocalisation (19 out of 30 cats), inappropriate urination (18 cats), depression-apathy (16 cats), aggressiveness (11 cats), agitation-anxiety (11 cats)

and inappropriate defecation (7 cats). The data also showed these cats were associated with households with no female residents, households with owners aged 18 to 35 years, and/or households with at least two female residents, as well as with not having access to toys (P=0.04) and/or having no other animal in the house (P=0.04).

This questionnaire still requires further validation based on direct observation of cat behaviour. It's also limited by a reliance on owners being able to accurately interpret and report their cats' actions in their absence (for instance, scratching on surfaces is normal in cats, though some owners may consider it destructive).

Although there's more work to be done elucidating the relationship between humans and pet cats, this questionnaire can act as a starting point for future research, in addition to indicating certain environmental factors (like toys) that could help cats with separation issues.

The authors add "This study provides information about behavioural signs consistent with separation-related problems (SRP) in a sampled population of domestic cats, as well as about the management practices used by their owners. The questionnaire identified that about 13% of cats may have signs consistent with SRP according to their owners' reports, and therefore, it could be a promising tool for future research investigating SRP in cats."

Journal References:

Daiana de Souza Machado, Paula Mazza Barbosa Oliveira, Juliana Clemente Machado, Maria Camila Ceballos, Aline Cristina Sant'Anna. Identification of separation-related problems in domestic cats: A questionnaire survey. PLOS ONE, 2020; 15 (4): e0230999 DOI: 10.1371/journal.pone.0230999



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