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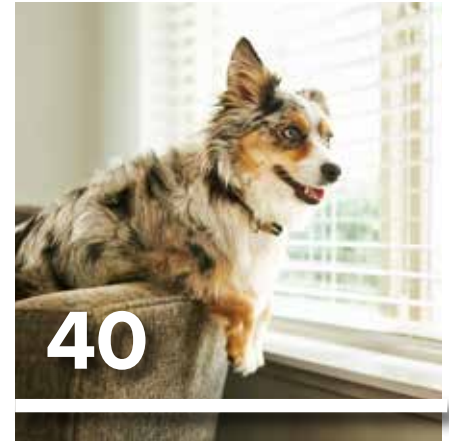
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VETS BEYOND BORDERS DEPLOYED TO HELP ANIMALS IN THE TORRES STRAIT

Veterinary services on Thursday Island are limited. Vets Beyond Borders (VBB) are collaborating with the Animal Welfare League Queensland (AWLQ) and with local island welfare group Thursday Island Animal Support Group (TIASG) to deliver vitally important veterinary care to the animals on Thursday Island.

Australian veterinary charity, Vets Beyond Borders, have played a key role in providing international animal welfare services to their partner organisations for almost two decades. They also work closely with established and highly regarded Australian welfare groups to address animal welfare needs closer to home.

“We often find pet owners in remote communities have the best interests of their animals at heart, but don’t have ready access to emergency or routine veterinary services” says Dr Sally Colgan, VBB CEO.

“At VBB we strive to address the immediate welfare needs of the animals our vets see, but we also recognise how important it is to implement preventative disease management strategies that will ensure good health is maintained long after we are gone” she said.

In one four day period, VBB volunteers worked with AWLQ and TIASG to treat over 130 animals.

“It was so encouraging to be welcomed by the community and to feel that our work was really needed and appreciated” said Dr Colgan.

A new team of veterinary volunteers are gearing up to return to the Torres Strait Islands soon. Our small team helps to provide affordable treatments, including desexing surgeries to the community’s animals in need.

VBB’s work not only improves the lives of animals, but it’s a win for the community too, who want the best for their animals. VBB does not receive any government funding and is completely reliant on donations to deliver veterinary care to where it’s most needed.

“It’s clear that there is a need for our veterinarians and veterinary nurses to help animals in need and thanks to all our amazing and generous supporters and volunteers who allow us to continue to deliver on these great projects” explains Dr Colgan.

Go to <https://vetsbeyondborders.org> for more information.



The Vet's Beyond Borders team on Thursday Island.

CURRAMORE WILDLIFE SANCTUARY EXPANDED TO PROTECT THREATENED SPECIES

Curramore Wildlife Sanctuary in south-east Queensland has been expanded to almost 200 hectares, after the title for a 26.1-hectare parcel of land was officially transferred to Australian Wildlife Conservancy (AWC) in January, 2022. The extension represents a 15% increase in area for the sanctuary and will provide additional protection for the diversity of wildlife recorded at the site.

Now encompassing 196.1 hectares in the hinterland of the Sunshine Coast, Curramore takes in an array of habitats including rainforest, tall eucalypt and grassy open forests. The variety in the landscape is reflected by the diversity of animal life it supports: more than 700 native species have been documented by AWC scientists since the sanctuary was first established in 2003 such as koalas, gliders and birdwing butterflies. Threatened species at the sanctuary include the Koala, Marbled Frogmouth, Grey-headed Flying Fox, and Golden-tipped Bat, as well as one of Australia's largest butterflies, the Richmond Birdwing.

The expansion area increases protection for threatened wildlife and connects Curramore to the road, providing better access for the AWC team to carry out weed control and conduct wildlife surveys. It also provides further protection for the headwaters of Little Cedar Creek (home to the endangered Maleny Spiny Crayfish) and increases connectivity with neighbouring protected areas across the Maleny Plateau.

AWC's management strategy at Curramore focuses on large-scale weed control, targeting highly invasive Lantana, coupled with fire management to restore the open grassy understorey and suppress weeds. At the same time, AWC conducts comprehensive, long-term monitoring of ecological health. In the latest survey conducted in October-November 2021, AWC ecologists documented three different species of gliders, as well as the threatened Tusked Frog.

To find out more about Australian Wildlife Conservancy, go to www.australianwildlife.org



Male Richmond Bird-wing Butterfly taking nectar from flowers



Klaus Runde leads AWC's weed control work at Curramore Wildlife Sanctuary, battling lantana. Source: www.australianwildlife.org



Over 700 native animal species occur at Curramore Wildlife Sanctuary, including the Sugar Glider and the threatened Tusked Frog. Source: www.australianwildlife.org

COLLABORATION BETWEEN DELTA INSTITUTE AND PET PROFESSIONAL GUILD AUSTRALIA

Delta Institute and Pet Professional Guild Australia collaborate to provide future dog trainers with professional experience in positive reinforcement dog training.

Delta Institute's newly developed nationally accredited ACM40321 Certificate IV in Animal Behaviour and Training offers aspiring professional dog trainers an evidence-based education and professional experience in the field of positive reinforcement dog training.

Through the collaboration with Pet Professional Guild of Australia (PPGA), Delta Institute students enrolled in the Certificate IV in Animal Behaviour and Training will have the opportunity to connect with professional dog trainers practicing positive reinforcement training as part of their professional experience requirements of the course.

The collaboration between the Delta Institute and PPGA will see students observe and shadow a positive reinforcement dog trainer for a minimum of three group training sessions. This will give students valuable exposure to high quality positive reinforcement dog training in practice, and the real life needs of dogs and their families.

Delta Institute's purpose is to help animals bring joy to people. The Delta Institute believes that a better relationship between people and dogs will lead to a more enriched and fulfilled life for humans and dogs alike. Delta strives to be the Australian leader in evidence-based positive reinforcement and animal assisted education in partnership with our trainers, assessors, members, volunteers, animals and community. Delta Institute is a Registered Training Organisation (RTO ID 90250) regulated by the Australian Skills Quality Authority (ASQA).

Pet Professional Guild of Australia (PPGA) envisions a world where people and pets can live together to their mutual benefit and where pets can live and function free from physical and mental pain, stress, and fear as valued family members. PPGA's mission is to make every pet valued member of their family and to improve the quality-of-life people share with their pets.

For more information:

Delta Institute Lila Tilman - course@deltainstitute.edu.au

Pet Professional Guild of Australia Barbara Hodel - president@ppgaustralia.net.au

“Delta’s Certificate IV in Animal Behaviour and Training has been developed in close consultation with industry and by members of the Delta Institute Expert Advisory Committee, who all bring a wealth of knowledge, industry experience, and insight into positive reinforcement training and the human-animal bond. It is robust and steeped in evidence based theory alongside real world experiences that set students up for success. Key to this is experiencing the industry first-hand. Our collaboration with Pet Professional Guild Australia enables the next generation of positive reinforcement dog trainers to engage with and learn from like-minded professionals from the start of their careers.”

**Melinda Farrell,
CEO Delta Institute**





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THE AUSTRALIAN DOG OF THE YEAR

From Guide Dogs and Therapy Dogs to Blood Donor Dogs, Police Dogs and Conservation Detector Dogs, and every noble pooch in between, the Australian Dog of the Year Awards have confirmed just how incredible and inspiring our doggos are!

Puppy Tales announces the 2022 Australian Dog of the Year and People's Choice Award, including a Bonus Prize – dogs recognised for inspiring and making an incredible impact in the lives of people, the environment or other animals.

"Reading the entries of noble dogs has been moving, funny and always endearing," said Kerry Martin, international award-winning pet photographer and founder of Puppy Tales, a website aimed at helping pet owners make the most of life with their fur family.

"We're reminded once again of just how incredible our doggos are, and seen how ordinary Paw-stralians from across our nation have helped their people through difficult times and made a difference to others and the communities that they live in."

"We've found ourselves smiling, laughing and even reaching for the tissues as we've read through the beautiful stories of our Aussie fur family and the people they've helped. Once again, it's been highlighted that for many of us, our puppers are our best friends, closest companions and furry superheroes!"

The winners' chosen registered charity has received a \$1,000 donation from Puppy Tales. See the other finalists on the following pages.

PEOPLE'S CHOICE



POPPI THE GUIDE DOG

Chosen Charity:

Guide Dogs NSW/ACT

Nine years ago, Liz Stojan lost her sight, her job and the ability to do ordinary things like crossing roads, cooking food or getting to the shops. She lost all hope and then Poppi changed everything.

"I had a goal to complete a counselling degree. With Poppi I was able to catch trains, find class rooms, and feel safe to study. Poppi attended all the classes and co-counselled during placement. She's a brilliant counsellor who has brought comfort to many."

"She's graduating with an honorary degree in March." said Liz, Poppi's owner.

PET CIRCLE BONUS PRIZE



ROCKY THE CONSERVATION DOG

Chosen Charity:

Southern Queensland Landscape

Every year, Rocky single-handedly saves the lives of 30,000 plus endangered green loggerhead and flat back turtle hatchlings and further helps protect the 10,000 endangered Mary River turtles.

He has also helped restore the population of critically endangered bilbies from feral cats at Currawinya National Park, making him an international hero.

"Rocky's job is tough and dangerous, and he shows courage everyday he ventures out to protect the environment," Rocky's buddy and handler, Tom Garrett.

DOG OF THE YEAR



HARRY THE BLIND STORY DOG

Chosen charity: Story Dogs

Before Covid, Harry was a Story Dog at a local primary school, where he listened to reluctant readers and helped build up their confidence.

Harry, being blind, couldn't tell what the story was about from looking at the pictures, so his owner Barbara Allen would ask the children to read carefully so Harry could understand the story.

Harry also helped students understand that having a disability or a difference did not mean they weren't special, couldn't have fun or make friends. "Harry is our Paralympian, bringing home gold every day!" said Barbara.

Q&A WITH BARBARA ALLEN, HARRY'S OWNER

Tell me about Harry - how did he come into your life?

Harry is a collie/spaniel cross, approx. 10 years old. We adopted him four years ago from the Lost Dog's Home. Our elderly dog Rosa had died a year before. I remembering waking up and thinking that I couldn't stand another day without a dog, it was time to start looking. When we saw Harry, we fell in love. Our previous two dogs had gone blind, so adopting a blind dog did not worry us. Harry was not born blind; his eyes were removed by the shelter vet before he was available for adoption, because they were in such a bad state. Harry's sense of our home, knowing where things were as soon as he walked in the front door - was truly remarkable.

Why did Harry start volunteering as a Story Dog?

Harry started volunteering with Story Dogs 3 years ago, but this has been disrupted due to Covid 19. As a former teacher, I know the importance of reading. I love books and the adventures they can take one on, and the way they ignite one's imagination. I didn't want any child to miss out on that.

Story Dogs go into local schools and the dogs listen to reluctant or emerging readers. The students may have reading problems, or be good readers, but shy and therefore lacking confidence when reading aloud. The dogs (and the human component) do not correct, they allow the student to read, and, hopefully, to enjoy the experience. I hope Harry also teaches them about difference, and about seeing beyond a physical or emotional disability, that these things do not define you. Harry has been able to empower students, and inspire staff and volunteers. He is an enabler, an encourager. He has a very calm temperament, and loves lying on the couch, being patted.

Every Story Dog is a champion; I like to think that Harry has accepted the award on behalf of the 500 dog teams who go into over 350 schools around Australia to hear over 2500 children read each week (the numbers have changed during Covid 19, of course).

What impact has Harry had on your life?

I walk Harry twice a day, often someone will say something along the lines of "Oh, you are wonderful taking on a blind dog". Then I say "No, it has been a privilege...just because a dog is blind doesn't make them less of a dog." I talk about difference, and abilities, rather than disabilities. Recently, my husband has become visually impaired due to facial nerve cancer; everyday he is inspired by Harry. Harry has taught him to see with his heart, showed him that you can still have a purpose, still do things, and still love life without sight.

What impact has being a story dog had on Harry's life?

I know that Harry enjoys being a Story Dog. He loved Monday mornings, his Story Dog day. He loves children and would connect with each child. After the sessions ceased due to Covid 19, Harry would sit by the door every Monday morning, waiting to be driven to school. It was hard to watch his disappointment; he missed hearing the stories, he missed the pats and cuddles, the voices of children, oh and then the treats at the finish.

How do you feel about Harry receiving the award?

I have always been so proud of our wonder dog who cannot see with his eyes, but sees with his generous, welcoming heart. He has taught us about trust, because he has ABSOLUTE trust in us. He has faith in us, that we will keep him safe.

I like to think that 2022 has shown Australians that people and animals with disabilities can make a difference. We need to look beyond what one cannot do, to what can be done, and to celebrate difference.



THE AUSTRALIAN DOG OF THE YEAR

MEET THE OTHER FINALISTS FOR 2022



BANDIT, ENGLISH SPRINGER SPANIEL

Bandit supports our son Bailey who has ADHD and severe anxiety. Bailey does Distance Education as he struggles with the mainstream school environment.

The Pandemic has reduced opportunities for Bailey to socialise but Bandit stepped up and became Bailey's 'study buddy' and best mate. He is a wonderful calming influence too.



BOO, JACK RUSSELL X

Boo started coming to the primary school I was principal at. To be honest, I needed him! But something incredible came out of it. Boo just wanted to be with the kids. He'd strut through the school making everyone's days a little easier. He attended reading sessions, helped engage the students, helped anxious children come into the school & was a friend to all. Boo is the little dog with a big heart.



SAMMY, GERMAN SHORT HAired POINTER

Sammy came into my life when I was at my lowest, battling mental issues. This year both Sammy and I embarked on turning around the stigma and raising awareness and funds for mental health. We ran/rode from Devonport to Dover (480km) for Speak Up Stay Chatty and raised close to \$10k.



CRYSTA, MIXED BREED

Crysta is a Pets as Therapy Dog with Delta Society. She regularly visits the local Children's, Mental Health and General Health Wards. She's made a considerable difference to many patients, and hard working staff. She visits Christmas morning to make sure everyone starts the day off with love. Crysta is starting a new role in our local court house supporting court goers and staff there.



OSCAR, BEARDED COLLIE X

Oscar has the most gentle and patient soul. For example, in 2021 Oscar went for his usual early-morning 'toilet-lap'. Somehow he returned with an abandoned & scared baby ringtail possum attached to his back. After a few calls, the uninjured possum was delivered safely to a local wildlife carer.

Oscar is the ever-happy and loving heart and soul of our family.



LOLA, BORDER COLLIE

I suffer with COPD and Lola is able to assist me when I'm really struggling to breathe. She helps with lots of jobs, however the one thing she does for me that I love the most is being there for me when I'm anxious. She helps me feel brave. Lola is also able to help my elderly parents - if they happen to drop their cane she will pass it to them. Lola has also been to our local aged care to perform tricks. She's one in a million.



RUBIE, GOLDEN RETRIEVER

Rubie is a Therapy Dog and visits the local library (where special children read to her) and the hospital.

Rubie just wants to please you, and to be there for you. She's always looking after me. After tripping and landing on my face, Rubie rushed quickly to me to help get me up by bracing herself, allowing me to pull myself up, so now my husband refers to her as the 'Wonder Dog'.



HARPER, KELPIE X

Harper saved my life more than once. I lost my husband to suicide. I was depressed, scared, on sleeping medication & wasn't able to work. My life nearly ended when I decided I would run into a semi trailer but made a split-decision not to. Harper chose & saved me. Days when I couldn't get up, she would jump on the bed with a toy in her mouth, wiggling her bum to play. Nights that were previously unimaginable were easier with her next to me. Harper has changed my life.



KELLI, KELPIE X

Kelli took it upon herself to become co-carer for my deaf Mum. Following many hospitalisations my mum asked her Doctors to cease all medications. I was told she had a week and chose to bring her home. 'Nurse' Kelli welcomed Blue Care's daily visits and kept 24 hour vigilance, waking me when Mum needed assistance. In June 2021, I made the hard decision of Aged Care Residency. Kelli's regular visits consist of me being dragged through the corridors to share love with everyone she passes and on to Mum's room.

In 2020 I needed a life threatening operation. My partner had a fatal heart attack the night I was admitted & I had to organise the funeral from hospital. It's been tough. Kelli must feel it as well but she cheers me up with her cheeky licks.



COOPER, LABRADOR X

Cooper's a certified therapy dog. He comes to work with me in my classroom & is adored by our whole school community. He's a blessing for children with additional needs. It's only with him that I'm able to support these students through meltdowns and bring them back ready to learn.

In 2020 we were camping in Mallacoota when the catastrophic bushfires hit. Cooper showed such bravery. We evacuated out on a boat for 19 hours, hiding under the cover to escape the wind & fire surrounding us. He emotionally supported me when I didn't think we were going to survive. He endured a long ship ride on HMAS CHOULES to return home. This event caused me many issues, including PTSD. He is by my side everyday helping me cope with my anxiety, depression and PTSD. I simply would not be here (alive) without him.



TILDY, CORGI

Tildy was a faithful companion to my 11yr old daughter Peta. We decided to buy Peta a puppy after her diagnosis of Brain Cancer. Peta set her heart on a corgi. Tildy brought her so much love, comfort and happiness through her treatment. With Peta leading her from a wheelchair Tildy gained her 13 championship points – the last only a month and a half before she passed. Peta was dreadfully weak but it brought her much delight. Tildy was lying on her bed, head on her chest, as Peta passed away. Tildy was such a wonderful gift to Peta in her final years, and has been a constant lifeline and comfort to me through the trauma of child loss. Tildy's Sausage Sensation, a children's story about Tildy and Peta, is currently raising money for childhood cancer charities and Tildy's charm is helping to promote the book.



TRIXIEBELL, CAVALIER KING CHARLES SPANIEL

As a Story Dog Trixiebell works in schools, spreading happiness among children & teachers, especially during difficult COVID times. Teachers love her visits, giving belly rubs. Sometimes, if given the chance, she jumps in their laps and catches them by surprise! Children adore her and can't wait to read to her. Trixiebell has several photo books, made during lockdown, to share with children.

Trixiebell frequently visits an Aged Care Facility where her effervescent personality brought fun and laughter to the residents and workers. Together we've raised \$2,500 for the Cancer Council – a charity that helped me through my tough time alongside Trixiebell. She really is family; one in a million!



ABOUT KERRY MARTIN & PUPPY TALES

Kerry Martin is a Melbourne-based and international award-winning family and pet photographer who considers pets (like children) very much part of the family.

It's for this very reason that she specialises in portraiture photography that includes the entire family! Kerry is also Editor of Puppy Tales, a website devoted to the promotion of wonderful relationships between dogs and people.

This means exploring the further integration of dogs into our society and highlighting the benefits and enjoyment they can bring to all members of our community.

Kerry has received many photography awards over the past decade, including Master of Photography and Australian Pet/Animal Photographer of the Year.

To discover more, visit puppytales.com.au

HOW TO GIVE YOUR PUPPY THE BEST START IN LIFE? THE ANSWER'S IN THE GUT

As puppies grow rapidly in their first few months of life, they are constantly exposed to new stressors that can limit optimal development. New Australian Dog Supplement brand, ZamiPet, says that essential nutrients such as Omega-3 and Prebiotics, play a significant role in a puppy's long-term health and wellbeing.

Leading Australian pet health expert and Head Vet at ZamiPet, Dr Andrew McKay, said some puppies aren't getting a complete and balanced diet for their age and also encounter a number of stressful situations which can have a detrimental effect on their immune system. "This in turn can impact their overall health and wellbeing."

Pet ownership in Australia has soared to record heights in the past two years, with over two million households across Australia owning at least one pet since the start of the pandemic, according to new data by Animal Medicines Australia. To address this need, ZamiPet has launched a puppy-specific supplement catering for the thousands of new dog owners wanting to give their pets the best start in life.

ZamiPet's Best Start Puppy Multi is formulated with a comprehensive range of key ingredients that cannot be found in food alone. These help to fill nutritional gaps in a puppy's diet and support healthy growth, digestion and nutrition at a critical time during their development period.

Ingredients include Omega-3 to help support a puppy's brain development, memory and learning habits; Prebiotics to support a healthy gut and reduce inflammation brought on by new environmental stressors; as well as natural antioxidants including Turmeric, and Vitamins A, B, C and E, helping puppies develop into the best and healthiest versions of themselves.

"ZamiPet's Best Start Puppy Multi helps puppies develop into healthy dogs, giving dog owners comfort in knowing they are

filling nutritional gaps for their newest family member and supporting their optimal health and wellbeing," says Dr McKay.

"Many new puppy owners come to me wondering if their pet's diet is providing all of the necessary nutrition, but with appropriate and consistent supplementation, dog owners can feel more assured."

We've all experienced the stress and upset puppies go through during their first few nights, and sometimes weeks, in their new human home. Puppies are exposed to a range of physical and mental stressors including weaning, separation from their mother and litter, and adjusting to life in a new home. Dr McKay says this can impact a puppy's nutritional requirements, particularly their immune system, which is why it's so important their diet includes high quality nutrients to reduce the impact of stressors on the animal.

"Puppies encounter a number of stressors. There are lots of changes they experience early in their growth and development. So why not give our puppies that extra insurance policy - optimise their wellbeing and help protect their immune system during such a significant transitional phase," he said.

ZamiPet Best Start Puppy Multi is recommended to be taken from as early as six weeks. Adulthood for bigger breeds starts from 15-18 months, and smaller breeds enter adulthood from 10-12 months.

Dog owners can transition from ZamiPet Best Start Puppy Multi to ZamiPet Complete Care Multi once their pooch reaches eight or nine months (dependent on breed size).

ZamiPet Best Start Puppy Multi offers a unique, clover-shaped, breakable and tasty chew that is smaller in dimension than the regular range for easy feeding or fussier pups.



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MOST DOG BREEDS HIGHLY INBRED

Dog breeds are often recognized for distinctive traits. The short legs of a dachshund, wrinkled face of a pug, spotted coat of a Dalmatian. Unfortunately, the genetics that give various breeds their particular attributes are often the result of inbreeding.

In a recent study published in *Canine Medicine and Genetics*, an international team of researchers led by University of California, Davis, veterinary geneticist Danika Bannasch show that the majority of canine breeds are highly inbred, contributing to an increase in disease and health care costs throughout their lifespan.

“It’s amazing how inbreeding seems to matter to health,” Bannasch said. “While previous studies have shown that small dogs live longer than large dogs, no one had previously reported on morbidity, or the presence of disease. This study revealed that if dogs are of smaller size and not inbred, they are much healthier than larger dogs with high inbreeding.”

INBREEDING AFFECTS HEALTH

The average inbreeding based on genetic analysis across 227 breeds was close to 25%, or the equivalent of sharing the same genetic material with a full sibling. These are levels considered well above what would be safe for either humans or wild animal populations. In humans, high levels of inbreeding (3-6%) have been associated with increased prevalence of complex diseases as well as other conditions.

“Data from other species, combined with strong breed predispositions to complex diseases like cancer and autoimmune diseases, highlight the relevance of high inbreeding in dogs to their health,” said Bannasch, who also serves as the Maxine Adler Endowed Chair in Genetics at the UC Davis School of Veterinary Medicine.

The researchers partnered with Wisdom Health Genetics, a world leader in pet genetics, to obtain the largest sample size possible for analysis. Wisdom Health’s database is the largest dog DNA database in the world, helping researchers collect data from 49,378 dogs across 227 breeds - primarily from European sources.

SOME BREEDS MORE INBRED

So, what makes a dog breed more inbred than others? Bannasch explained that it’s often a combination of a small founding population followed by strong selection for particular traits in a breed - often based on looks rather than purpose. While she has always had an interest in the population structure of some of these breeds, she became particularly interested in the Danish-Swedish farmdog several years ago. She fell in love with their compact size, disposition and intelligence, and ended up importing one from Sweden.

Bannasch discovered that Danish-Swedish farmdogs have a low level of inbreeding based on their history of a relatively large founding population of 200, and being bred for function, rather than a strong artificial selection for looks. And according to the insurance health data on breeds collected from Agria Insurance Sweden and hosted online by the International Partnership for Dogs, the farmdog is one of the healthiest breeds.

The study also revealed a significant difference in morbidity between brachycephalic (short skull and snout) and non-brachycephalic breeds. While that finding wasn’t unexpected, the researchers removed brachycephalic breeds from the final analysis on effects of inbreeding on health.

“While previous studies have shown that small dogs live longer than large dogs, no one had previously reported on morbidity, or the presence of disease. This study revealed that if dogs are of smaller size and not inbred, they are much healthier than larger dogs with high inbreeding.”

Danika Bannasch,
Veterinary Geneticist

PRESERVING GENETIC DIVERSITY

In the end, Bannasch said she isn’t sure there is a way out of inbred breeds. People have recognized that creating matches based solely on pedigrees is misleading. The inbreeding calculators don’t go back far enough in a dog’s genetic line, and that method doesn’t improve overall high levels of population inbreeding.

There are other measures that can be taken to preserve the genetic diversity and health of a breed, she said. They include careful management of breeding populations to avoid additional loss of existing genetic diversity, through breeder education and monitoring of inbreeding levels enabled by direct genotyping technologies.

Outcrosses are being proposed or have already been carried out for some breeds and conditions as a measure to increase genetic diversity, but care must be taken to consider if these will effectively increase overall breed diversity and therefore reduce inbreeding, Bannasch said. In particular, in the few breeds with low inbreeding levels, every effort should be made to maintain the genetic diversity that is present.

Other UC Davis authors include Thomas Famula, Kevin Batchler, Noa Safra, Sara Thomasy and Robert Rebhun. Contributors from Wisdom Health Genetics include Jonas Donner, Heidi Anderson and Leena Honkanen. This work was supported by the International Canine Health Award and the Maxine Adler Endowed Chair Fund.





ZOO ENRICHMENT COULD GO FURTHER

Zoos and aquariums could improve the lives of a wider range of their animals, new research suggests. The use of “environmental enrichment” (giving animals stimulating environments) has become increasingly common in zoos and aquariums in recent years.

The new study, by the University of Exeter and Sparsholt College Hampshire, investigated whether zoos base their enrichment on evidence of what each species needs.

It found this was the case for certain animals - especially carnivores and parrots - and certain types of enrichment.

However, the study identifies opportunities to “diversify the enrichment types being offered and species being researched.”

“Our study shows that environmental enrichment is important, and zoos and aquariums are taking it seriously,” said Dr Paul Rose, of the University of Exeter.

“Enrichment is no longer an afterthought, as it was 15 or 20 years ago. Based on our findings, we would urge zoos to keep doing enrichment, but with a greater focus on using the available evidence on what works for each species.

“Keepers should ask themselves what behaviours are being promoted, and what evidence exists to show that this behaviour is natural and beneficial in the long term.”

The study examined a database of peer-reviewed studies, and two publications for zoo professionals.

Of the enrichment articles identified, almost 77% focussed on mammals, with 11% on birds, 6% on multiple species, 4% on reptiles and only a handful on amphibians, fish and invertebrates.

This focus on certain “high-profile” species can lead to more and better-quality enrichment for some species than others.

However, the use of biological evidence to inform this enrichment was patchy in the case of mammals.

The researchers also noted other differences. For example, enrichment for parrots was more often evidence-based than enrichment for penguins.

The study identified a focus on certain types of enrichment, particularly nutritional enrichment - where food is provided in a way that mimics the animal’s natural environment.

Meanwhile, there were far fewer articles on social enrichment, which focusses on the mix of individuals in a group, multiple mating options, etc.

“We encourage all zoos that practice enrichment to share their findings, as it may be that the range of enrichment being used isn’t always in the literature.”

James Brereton, of Sparsholt College Hampshire

Journal Reference: J Brereton, P Rose. An evaluation of the role of ‘biological evidence’ in zoo and aquarium enrichment practices. *Animal Welfare*, 2022; 31 (1): 13 DOI: 10.7120/09627286.31.1.002

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“COVID 19 has worsened the pre-existing skills shortage within the veterinary profession and it’s now getting to the point that some small animal emergencies cannot be treated.”

Dr Cristy Secombe, AVA Head of Veterinary and Public Affairs

VETERINARY SERVICES ARE BEING HIGHLY IMPACTED BY OMICRON, BUT STATES HAVEN’T CHANGED DEFINITIONS AND ANIMALS ARE SUFFERING

The Australian Veterinary Association (AVA) is calling on state and territory governments to recognise that all veterinary services are being highly impacted and implement the National Cabinet guidelines, so veterinary teams have the flexibility to manage close contacts to ensure veterinary services can continue to be delivered.

“Veterinarians are highly trained in infection control, they understand emergency disease responses and are able to manage infection risk. They are well positioned to be able to manage the risk associated with asymptomatic close contacts of Covid-19,” said Dr Cristy Secombe, AVA Head of Veterinary and Public Affairs.

The Australian Veterinary Association surveyed the veterinary profession to understand the impact of Covid-19 is having on the care of animals across Australia. 23% of respondents indicated that the welfare of animals had been significantly negatively affected by COVID-19 restrictions over the past four weeks, with a further 47% stating that it had been somewhat affected.

In the states most affected by the Omicron variant, 87% of veterinary practices have experienced staff shortages due to COVID-19 with 25% having had to close for periods as a result and a further 31% having to reduce hours.

This is making it increasingly difficult for animal owners to get veterinary appointments for their pets and placing veterinary staff under incredible stress.

An average of 14% of veterinary teams are quarantining as a result of being infected with COVID. However, an average of 26% are quarantining as close contacts and could return to work to care for pets under the current national cabinet guidelines.

“To allow veterinarians to provide veterinary care for all animals including pets we implore the state governments to urgently modify public health orders and reflect the guidance provided by national cabinet in recognition that all veterinary services are highly impacted. COVID 19 has worsened the pre-existing skills shortage within the veterinary profession and it’s now getting to the point that some small animal emergencies cannot be treated” said Dr Secombe.

COMPANIES TO PAY \$250,000 AFTER CLEARING PROTECTED BLACK COCKATOO HABITAT

Three Western Australian companies will pay \$250,000 as part of an enforceable undertaking after contravening Australia's national environment law, the Environment Protection and Biodiversity Conservation Act 1999.

Novalee Nominees Pty Ltd, Estates 77 Pty Ltd and Spatial Property Group Pty Ltd cleared 10.18 hectares of native vegetation that was home to the endangered Carnaby's Black Cockatoo, without approval under the Act.

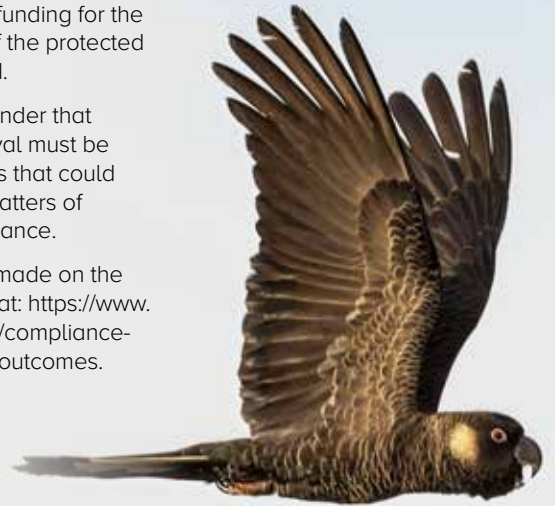
This native vegetation is also critical habitat for the Forest Red-tailed Black Cockatoo and Baudin's Black Cockatoo, both listed nationally as vulnerable species.

As part of the undertaking, the companies will pay \$250,000 for research by the Western Australian Museum Boola Bardip to protect and conserve the protected black cockatoo.

An enforceable undertaking is considered an appropriate response to the contravention as it provides for the provision of funding for the protection and conservation of the protected matter that has been impacted.

This outcome serves as a reminder that Australian Government approval must be sought before starting activities that could have a significant impact on matters of national environmental significance.

The enforceable undertaking made on the 20 January 2022 is available at: <https://www.awe.gov.au/environment/epbc/compliance-and-enforcement/compliance-outcomes>.



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OVERWEIGHT DOGS RESPOND WELL TO HIGH-PROTEIN, HIGH-FIBRE DIET, STUDY FINDS

A study of overweight dogs fed a reduced calorie, high-protein, high-fibre diet for 24 weeks found that the dogs' body composition and inflammatory markers changed over time in ways that parallel the positive changes seen in humans on similar diets.

The dogs achieved a healthier weight without losing too much muscle mass, and their serum triglycerides, insulin and inflammatory markers all decreased with weight loss.

All such changes are beneficial, said University of Illinois Urbana-Champaign animal sciences professor Kelly Swanson, who led the new research.

Previous studies have shown that overweight and obesity lead to a shorter lifespan and a lower quality of life - in dogs and humans, Swanson said.

"Some of the problems we see in humans with obesity also occur in pet dogs," he said. "There's added stress on the joints, there's an intolerance to exercise and heat; there's also glucose intolerance, insulin resistance. And if you look at pet insurance claims, obesity is a big factor there."

Reported in the *Journal of Animal Science*, the study is unusual in that it also measured changes in the dogs' fecal microbiota over the course of losing weight, Swanson said.

Even though there are similarities in dog and human metabolism and digestive processes, dogs and humans differ in the species of microbes that inhabit the gut, he said. These microbes perform similar functions, however. They metabolize proteins, carbohydrates and other molecules that are derived from food but escape digestion by the host; and they break down fibre to produce short-chain fatty acids that are important in regulating

glucose and appetite, reducing inflammation, bolstering the immune system and providing energy to cells in the colon.

Some of the microbial changes observed in the dogs were difficult to interpret, Swanson said, but a reduction in fecal ammonia - probably the result of eating less protein on the calorie-restricted diet - was likely beneficial.

"High concentrations of ammonia are toxic," he said.

Dogs that lost weight also had increases in the proportion of bacteria of the genus *Allobaculum*. Higher *Allobaculum* populations correlated with an increase in fecal butyrate, a short-chain fatty acid that is a byproduct of the fermentation of dietary fibre. Previous studies have shown that butyrate has anti-inflammatory and anti-carcinogenic effects in the gut.

Total short-chain fatty acid concentrations did not change over time, however. This may reflect the fact that most of these organic acids are absorbed and not excreted, the researchers report.

Most studies of gut microbiota focus on humans, so the new research offers insight into the similarities and differences between dogs and humans, and how they respond to dietary changes and weight loss. More research will be needed to clarify the findings, Swanson said.

Funding for this project was provided by Perfect Companion Group Co. Ltd., Thailand.

HUGO BOSS BECOMES SHEEP'S FRIEND

Hugo Boss has sent a clear message against animal cruelty by becoming verified mulesing-free by 2025.

Global animal welfare organisation FOUR PAWS, which has been campaigning against the cruel procedure for several years, welcomes this latest success in its Brand Check. The German fashion company announced that it will exclusively source mulesing-free wool for its pure wool suits from 2025. In addition, the use of mulesing-free wool for the entire product range is to be promoted by 2030.

A total of 35 international fashion brands, including sports giant Adidas and Calvin Klein, and now, most recently HUGO BOSS, have expressed their intention to purchase only certified mulesing-free wool in an open letter addressed to the Australian wool industry led on by FOUR PAWS. The goal of the animal rights activists is to mobilise enough brands to publicly speak out against animal suffering in production and to implement necessary measures to encourage the largely Australian-based sheep wool industry to end the cruel procedure.

"Hugo Boss has been one of our most vocal and active supporters of mulesing-free wool for a number of years, and now they will put their words into practice. Together we have also been able to improve the brand's animal welfare policies overall. The basis for discussion has always been respectful, constructive and most importantly collaborative." Rebecca Picallo Gil, Campaign Manager for Wool at FOUR PAWS.

CUSTOMER EXPECTATIONS ON THE RISE

A recent study by FOUR PAWS shows that animal suffering is also increasingly causing discontent among clothing customers. Since COVID-19, almost one third (31%) of the 14,000 respondents in twelve countries worldwide either consciously look for clothing with animal welfare standards or avoid animal textiles altogether. Brands that follow this trend are also preferred by one in three (37%).

"This strong signal should encourage as many brands as possible from different fashion sectors to take the same step. We could already see that outdoor brands in particular are opposing mulesing wool, while luxury fashion manufacturers showed rather little interest. With Hugo Boss, we have gained another ally in the premium segment for the animals. We are calling on more brands to reliably exclude mulesing wool in order to spare more than ten million lambs in Australia from this cruel and outdated procedure in the future," says Picallo Gil.

BACKGROUND

Over 75 per cent of wool exports and as much as 90 per cent of the popular fine merino wool used in the global fashion industry come from Australia - the only country in the world where mulesing is still practiced. Mulesing is a painful method carried out on lambs a few weeks old, in which large strips of skin are cut out of the animals' buttocks without anaesthesia to protect them from blowfly infestation. But there have long been alternatives.

For example, sheep breeds that are more resistant to parasites than the overbred Merino sheep. Strong support from the sheep wool industry is needed to enable brands that do not want to do without merino wool to obtain sufficient mulesing-free wool. Hence the open letter from brands to the industry. Consumers can also take action by explicitly asking brands and orienting themselves towards reliable certifications when buying clothes.

In the course of the FOUR PAWS Brand Check, eight brands have already been motivated to use mulesing-free wool. In addition to fashion giants such as Calvin Klein, Puma and C&A, HUGO BOSS is now the ninth international brand to implement reliable measures to phase out mulesing wool.

You can find out more about Four Paws on their website - www.four-paws.org.au



SKIN ALLERGIES IN DOGS AND CATS



WHAT ARE THE MOST COMMON SKIN ALLERGIES IN PETS?

The most common skin allergies in dogs and cats are to things in their environment such as dust mites, pollens and grasses. These skin allergies manifest as itching and scratching, causing red, inflamed and damaged skin, a condition which is called atopy, or atopic dermatitis. Another common allergy is to fleas, which, predictably enough, is called flea allergy dermatitis. These are the big two skin allergies seen in dogs and cats throughout Australia and New Zealand and we typically see them seasonally - but some (such as dust mites) can be seen all year round. Allergies to food, while also a possibility for causing skin reactions, are actually much less common than atopic dermatitis and flea allergy dermatitis, making up only 10-15% of all skin allergies^[1] and typically occur all year round.

This may surprise many pet owners, given all the focus food allergies are given in the media! It may also come as a surprise that, despite common belief, grains are rarely the cause of food allergies and most often the allergy is to an animal protein with beef, dairy and chicken being the most common allergens in dogs and beef, dairy and fish for cats.

WHAT ARE ENVIRONMENTAL ALLERGIES?

The reason some animals suffer from environmental allergies is that they have a defective skin barrier which is an inherited disorder. Allergens, such as pollens pass through the skin (unlike in us where we inhale the allergens and typically get hayfever) which causes an allergic reaction. Moisture can also be lost through this defective barrier, causing the skin to be dry. This in turn makes the pet feel itchy and they scratch and lick their skin, causing further damage. An analogy you may want to think about is treated/oiled wood on a deck vs an untreated, undressed deck which represents a defective skin barrier.

While any breed can suffer from environmental allergies, there are some breeds which are more likely to have skin problems such as Golden and Labrador retrievers, German shepherds, English bulldogs, Boxers, Pugs, Boston terriers, Shih tzus, Miniature Schnauzers, and West Highland white terriers^[2].

MORE ABOUT FOOD ALLERGIES

For pets to be allergic to a food they must have eaten it previously in order to become sensitised to it. When the food is eaten repeatedly their immune system mounts an allergic response. A pet may have eaten the same food for months or years and then develop an allergy to it. A pet can develop an allergy to any protein fed commonly.

Food sensitivities or intolerances are quite different to food allergies in that they don't involve the pet's immune system. Collectively, food allergies and food intolerances are called adverse food reactions, and may result in gastrointestinal problems or skin problems, or both. Gastrointestinal signs may include loose stools, increased stool frequency, flatulence and sometimes vomiting and diarrhoea. Skin signs can mimic many other types of skin disease and can include itchiness around the face and paws, ear infections and can also be generalised over the entire body.

HOW ARE ADVERSE REACTIONS TO FOOD DIAGNOSED?

Unfortunately there is no blood or skin test to rule food allergy in or out. The only way to make a diagnosis is to do a food elimination trial, which involves feeding a diet made up exclusively of ingredients the pet hasn't eaten before. In addition to looking at all the ingredients in the regular food, all treats or flavoured medications/wormers, etc. a pet may have consumed (particularly within the previous 6 months) need to be taken into account.

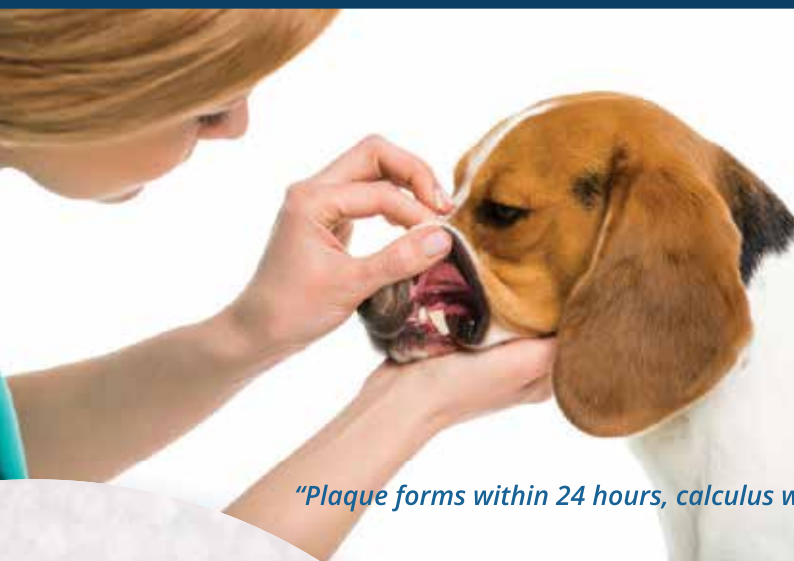
^[1] Mueller RS, Olivry T, Prélard P. Critically appraised topic on adverse food reactions of companion animals (2): common food allergen sources in dogs and cats. BMC Vet Res. 2016;12:9.

^[2] Miller WH, Griffin CE, Campbell KL, eds. Hypersensitivity Disorders. In: Muller and Kirk's Small Animal Dermatology 7th ed. St. Louis, MO: Elsevier; 2013:372

Zinc: Plaque's natural enemy



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



"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.

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AWARD-WINNING CULTURAL COMPETENCE GUIDE FOR VETS

Rebecca's* mother was raised on a remote farm and was absolutely opposed to keeping animals as pets and allowing them indoors. To her, every domestic animal was a working animal, kept for a purpose. She found it very difficult to understand why people would choose expensive and complex treatment for a pet that would never recover its full function. For some of Rebecca's rural friends, however, dogs were considered part of the family.

The anecdote is a testament to the importance of a project Associate Professor Jaime Gongora and colleagues have been labouring on for nine years – a world-first effort to embed cultural competence in veterinary science education.

An overview of the project – which aligns with industry recommendations – has just been published in the *Journal of Veterinary Medical Education*.

Already in use at the University of Sydney's School of Veterinary Science, the cultural competence curriculum is particularly pertinent to Australia, which has one of the highest rates of pet ownership in the world (70 percent of households) and is also one of the most multicultural nations (a quarter of the population is born overseas).

"Veterinarians work with culturally and linguistically diverse teams, clients, and communities," said Associate Professor Gongora, who is Colombian-Australian. "Despite this, there is little focus on this as a competency and in an educational setting. Cultural perspectives on animals and differences in communication, consultation and engagement protocols can influence relationships, impacting animal health, welfare, and research outcomes."

Depending on a client's cultural background, animals are a source of companionship, food, entertainment and/or are religiously or culturally significant. For example, in Western cultures, cattle can be seen as a source of food and labour. However, in some Asian, Middle Eastern and African cultures, cattle play an important religious role, and the slaughter of cattle and consumption of beef is generally prohibited. In other cultures, by contrast, cattle can be synonymous with wealth and higher socioeconomic status.



A CULTURALLY AWARE CURRICULUM

A work-in-progress since 2012, the project is embedded across seven units of study. A key component is cultural competence toward Aboriginal and Torres Strait Islander Peoples. As Associate Dean of Indigenous Strategy in the Faculty of Science, this element is close to Associate Professor Gongora's heart.

In the curriculum, Aboriginal knowledge holders teach students about the complexity of totems (spiritual emblems with associated caretaking responsibilities) and skin names (names identifying a person's position in a society) and how these relate to responsibility for animals. This knowledge can subsequently be applied in the field.

Co-author, Wurridjuri man Dr Stewart Sutterland, said "Understanding a little of how my culture differs from the dominant culture of the vet gives insights into how I may view animals; people of authority; and the language I use."

Another activity involves students reflecting on their and others' perceptions of animals when interacting with clients, using interviews of people from diverse cultural heritages: Australian Indigenous peoples, people of Muslim, African and Chinese descent, and an Australian farmer.

Unconscious bias against other social, ethnic and gender groups is also addressed in the curriculum, as is effective communication. For example, students learn about the differences between Western and Indigenous communication styles.

The latter includes storytelling, yarning circles, and non-verbal language. Deep listening and silence can be also part of their communication.

Project co-author, Associate Professor Sanaa Zaki from the University of Sydney School of Veterinary Science, said "Bringing awareness to students about unconscious bias and how this can impact their clinical decision making helps them develop empathy and respect for those that view animals differently, and informs how they communicate with culturally diverse clients."

Associate Professor Gongora said "Informal feedback from students has revealed that the program has fostered rich discussions, respectful interactions and an opportunity for growth through exposure to a diversity of ideas."

Based on its success, he and his colleague are developing a compendium of locally and internationally available resources on cultural competence for their students, some of which are already publicly available.

"What we have done since 2012 is develop a model framework for veterinary schools and other disciplines in animal science that seek to recognise that cultural competence is everyone's business," he said.

*Name has been changed to protect privacy.

"Bringing awareness to students about unconscious bias and how this can impact their clinical decision making helps them develop empathy and respect for those that view animals differently, and informs how they communicate with culturally diverse clients."

*Associate Professor Sanaa Zaki
University of Sydney School of
Veterinary Science*



Associate Professor Jaime Gongora with border collie, Mojo.

ABOUT ASSOCIATE PROFESSOR JAIME GONGORA

Associate Professor Gongora is an academic in wildlife genetics and genomics (including crocodiles, platypuses, oryxes, and peccaries) and Associate Dean, Indigenous, in the Faculty of Science.

He is Australian-Colombian who is enthusiastic about diversity and inclusion, and capacity building in less developed countries.

He has been honoured with the most prestigious awards in the field for his cultural competence work for vets, including the Office of Learning and Teaching Citation, the international Association of American Veterinary Medical Colleges-Iverson Bell Award, and the Genetics Society of AustralAsia Award for Excellence in Education.

COMPANION ANIMAL NETWORK AUSTRALIA APPOINTS ITS FIRST CEO



Australia CAN's first Chief Executive Officer, Trish Ennis and her dog Buddy.

Leading animal welfare charity Companion Animal Network Australia – Australia CAN (formerly Animal Welfare League Australia) appoints its first Chief Executive Officer, Trish Ennis, in its mission to support the human-animal bond and an estimated 30.4 million* pets and their owners across Australia.

Australia CAN's President Dr Megan Alessandrini said, "Australia CAN has developed considerably with a range of strategies aiming to honour and strengthen the human-animal bond, and it was time to make this appointment. Trish is a perfect fit for Australia CAN."

Ms Ennis joined Animal Welfare League Australia (AWLA) in December 2019 as National Executive. "When the National Executive role came to my attention, I hadn't really heard of AWLA, and soon found out there were a number of Animal Welfare Leagues around Australia that didn't belong under the AWLA banner. It was clear there was great confusion out there about who we were and what we do," she said. Ms Ennis said she's honoured to be appointed as CEO as she marks her second anniversary with the charity, celebrating her achievements to date. "Companion Animal Network Australia launched in October 2020 and today clearly speaks to who we are – it is Australia's only national peak body representing companion animals and the industry that works with them," said Ms Ennis. "With a clear strategic plan to work to, we are now on the path of completing our initiatives. We are here to support the human-animal bond and the estimated 30.4 million pets and their owners." Key projects in the works, Pets in Aged Care a priority. In August 2021, Australia CAN successfully launched www.rentwithpets.com.au, which works to decrease the number of pet surrenders due to archaic rental laws, whilst bringing landlords and tenants together. Australia CAN's next major projects include Pets in the Aged Care and Pets in Business, which is particularly poignant following COVID lockdowns with the increase of people getting pets and not wanting to return to the office full time, said Ms Ennis. "Australia CAN is currently actively advocating in support of pets in aged care settings as a major priority for the organisation," she said. "Older people are often forced to say goodbye to their companion animals when moving into aged-care accommodation, causing immense grief. Furthermore, the outcomes for their beloved pets vary, including surrender to a shelter. Australia CAN is working with aged care experts to find ways of preserving the bond between people and pets in aged care accommodation."

"Australia CAN needs donor support to continue the work of our members and corporate support to develop our programs. I look forward to building Australia CAN and developing strong partnerships and donor support to allow our members to continue the amazing work they do with the animals and families whilst continuing to develop the programs."

For more information please email tennis@australiacan.org.au

AUSTRALIA CAN'S PROJECTS INCLUDE:

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- New building developments that are pet friendly

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- More pet friendly open spaces
- Increasing transport options
- Contributing to the role of school-based education

Pet friendly businesses

- More pet friendly workplaces
- Increasing pet friendly holiday accommodation options
- More pet friendly cafes and restaurants
- Airlines and car transport companies to become pet friendly

Responsible pet ownership

- Better informed owners
- Respect the rights of non-pet owners
- Increasing the levels (coverage) of pet insurance
- Better bereavement support at the end of a pet's life
- Develop accessible standards for responsible pet ownership

ABOUT COMPANION ANIMAL NETWORK AUSTRALIA (CAN)

Companion Animal Network Australia (CAN) is a registered charity representing the companion animal welfare work of our six member agencies. We rally support to develop and promote programs that deliver high welfare standards for companion animals. Together, our members provide rescue, shelter, re-homing, fostering, health care and enrichment services to more than 50,000 animals every year. Through national campaigns, partnerships and initiatives, we celebrate the human-animal bond and promote responsible pet ownership. We use our national voice to campaign for the humane treatment of all companion animals and we rally support for programs that deliver high welfare standards. To discover more, visit www.australiacan.org.au

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BIODEGRADABLE 'FLAT-PACK' HOMES TO HELP WILDLIFE SURVIVE AFTER BUSHFIRES

It's the latest flat-pack innovation – a biodegradable shelter that can be rapidly installed to provide refuge for native animals left exposed and vulnerable after a bushfire. Newly designed 'habitat pods', developed by Dr Alex Carthey of Macquarie University, are this week being deployed as part of a world-first Australian Wildlife Conservancy research project at North Head Sanctuary.

Intense bushfires can be deadly for wildlife, both during the blaze and in the aftermath. The artificial shelters have been designed to address the high mortality of wild animals that occurs in the weeks and months after a bushfire. Indirect impacts, such as the removal of food and shelter, make this a dangerous period for animals, and the threat is compounded by intense pressure from hungry predators.

An estimated three billion vertebrate animals were impacted in the 2019-2020 Black Summer fires which burnt across an area of more than 12 million hectares in eastern Australia.

The pods are now part of a PhD project by ecologist and former Australian Wildlife Conservancy intern, Angela Raña, co-supervised by Sydney University. In 2020, Raña set out to study the role of small native mammals as pollinators of North Head Sanctuary's diverse banksia scrub. However, a hazard reduction burn that jumped containment lines in October 2020 destroyed her experiments and prompted a rethink.

"I'd been studying and monitoring the plants and animals here for two years, but after the fire we mostly found charred skeletons in the ash. It was heartbreaking," said Raña of the burn.

"With the thick undergrowth almost completely removed, any surviving animals could just be picked off by birds, foxes and cats."

Raña's project will now investigate the effectiveness of the habitat pods. Two hundred of the cardboard shelters are being deployed across parts of the headland that were impacted by the fire, for an experiment that will run for up to 12 months. It is hoped they will offer small animals short-term refuge from the elements and a place to hide from predators like feral cats, which have been shown to take advantage of easier hunting conditions post-fire.

The habitat pods themselves take the shape of a sturdy, six-sided pyramid made from folded cardboard, perforated with multiple small holes where animals can scamper in and out. Unlike the wire and shade cloth structures that have been used as post-fire shelters previously, the pods are light, easy to transport and set up, and entirely biodegradable.



The pods will assist wildlife such as the Eastern Pygmy Possum (pictured) in seeking refuge from the elements and providing a place to hide from predators. Image Credit: Holly Nelson/AWC



Angela Raña installing habitat pods at North Head. Image Credit: Joey Clarke/AWC

Dr Carthey's design was informed by her career researching predator-prey relationships and the key realisation that availability of habitat is a critical factor after a burn.

"The Black Summer fires acted as a wake-up call, and that got me thinking about what we could do to help wildlife survive," Dr Carthey said. "I had some conversations with the team behind the Living Seawalls project (finalists of the inaugural Earthshot Prize), who are also at Macquarie University, and their designer Alex Goad of Reef Design Lab. We even experimented with 3D-printing some moulds for prototypes from recycled paper pulp, but in the end the folded design held up better in testing."

North Head Sanctuary was chosen for the first ever real-world trial of the habitat pods. The headland is the site of an ambitious mammal reintroduction program run by Australian



In October 2020, AWC was called in to rescue wildlife, create shelter and assess the impact to the headland after a NSW National Parks and Wildlife Service hazard reduction burn jumped containment lines. Image Credit: Joey Clarke/AWC

Wildlife Conservancy, working in partnership with Harbour Trust. Three small mammal species which were locally extinct on North Head have been restored since 2017: the Eastern Pygmy Possum (*Cercartetus nanus*), Brown Antechinus (*Antechinus stuartii*), and Bush Rat (*Rattus fuscipes*). All three species have been recorded since last year's blaze, and are likely contenders to use and benefit from the installed habitat pods.

The ecologist leading the reintroduction program, Dr Viyanna Leo, had input into the design of the habitat pods, established the research at North Head and co-supervises Raña's research project.

"I think this work has huge potential," Dr Leo said. "Large-scale bushfires are an ongoing concern for conservationists, especially as the climate heats up. The habitat pods could be an effective new tool for bushfire response that makes the difference between life and death for thousands of native animals."

Australian Wildlife Conservancy is contracted by the Sydney Harbour Federation Trust to deliver research and monitoring projects at North Head, with a particular focus on restoring small mammals. New South Wales National Parks and Wildlife Service provided funding for the bushfire recovery research project.

To find out more about Australian Wildlife Conservancy, go to www.australianwildlife.org

PURPLE-CROWNED FAIRY-WRENS EXHIBITING UNUSUAL BREEDING BEHAVIOUR



As of November 2019, Mornington Wildlife Sanctuary's wren population is estimated to be around 204 individuals – an increase from 172 in July 2021 and 143 in November 2020. Image: Wayne Lawler/AWC



While still unexplainable, ecologists have welcomed increased breeding among the threatened species which experienced a significant population decrease during 2018 and 2020 fires. Image: Wayne Lawler/AWC



Females caught during dry season research had brood patches (bare patches on the belly) indicating that the females were actively breeding out of season. Image: Wayne Lawler/AWC

What gets birds in the mood to knock feathers? It's the unexpected question ecologists and researchers in central Kimberley have been faced with after witnessing an increase in Purple-crowned Fairy-wrens breeding outside of their traditional season.

Researchers who have studied and monitored Purple-crowned Fairy-wrens for 16 years at Australian Wildlife Conservancy's (AWC) Mornington Wildlife Sanctuary on Bunuba and Kija Country, caught the wrens romancing throughout the dry season (May to November) for a second consecutive year. They described the activity as 'highly unusual' given that breeding commonly takes place during the wet season (December to April).

Dr Niki Teunissen, a Research Associate running the on-the-ground research for a long-term Purple-crowned Fairy-wren project led by Professor Anne Peters of Monash University, said most of the adult females caught during a survey in November last year, had brood patches (bare patches on the belly) which indicate that the females were actively breeding out of season.

"Successful breeding amongst an endangered species such as the Purple-crowned Fairy-wren is always welcome, however, we are surprised by the extent of dry season engagement," said Dr Niki Teunissen, Research Fellow at Monash University. "We suspect that dry season breeding is a result of the above average rainfall we had last wet season which means water levels remained relatively high along Anie Creek and the Adcock River on AWC's Mornington Wildlife Sanctuary. This may have provided good conditions for breeding. However, it does not explain why there was so much dry season breeding last year too."

"To be honest, it goes against what we thought we knew about the birds' breeding behaviour and we don't quite understand the recent breeding activity by the wrens. It raises more exciting research questions for us to answer!"

While dry season breeding has heightened curiosity amongst the conservation and research team, it has also contributed to a much-needed increase in Mornington Wildlife Sanctuary's Purple-crowned Fairy-wren population.

In 2004, when AWC first acquired Mornington Wildlife Sanctuary, the species was in a dire state due to significant habitat damage caused by large feral herbivores and wildfires. Extensive destocking and effective fire management by AWC however saw a significant recovery in the wren population. Between 2018 and early 2020 however the population once again declined due to a severe, prolonged drought and fire.

As of November 2021, and thanks to extended periods of breeding, Mornington Wildlife Sanctuary's wren population climbed back up to 204 individuals – an increase from 172 in July 2021 and 143 in November 2020.

During the recent survey, Dr Teunissen, with help from AWC's operations and field scientists captured 56 new birds, most of which were fledglings (birds that hatched since the previous survey in July 2021), and a few were adult immigrants that had newly joined the population.

"It's all really good news for the Purple-crowned Fairy-wrens at Mornington Wildlife Sanctuary," Dr Niki Teunissen added. "We are really excited about this big boost in numbers and look forward to learning what our new findings may mean for the population moving forward."

The Purple-crowned Fairy-wren is a small social bird found in dense riparian vegetation in northern Australia. Both male and female wrens have brown backs, wings and a paler buff belly. During the mating season, males distinguish themselves by sporting a vibrant purple crown, while the females have grey heads and chestnut-coloured cheek patches.

The Purple-crowned Fairy-wren is considered at risk due to ongoing threats to riparian vegetation, on which they heavily depend. AWC protects the vegetation at Mornington-Marion Downs and Pungalina-Seven Emu Wildlife Sanctuaries by removing major threats such as large feral herbivores and implementing effective, large-scale fire management programs.

To find out more about Australian Wildlife Conservancy, go to www.australianwildlife.org



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FRACTURED CANINE AND A ROOT CANAL CASE IN A DOG

Dr David E Clarke BVSc Diplomate AVDC Fellow AVD Registered Specialist, Veterinary Dentistry and Oral Surgery. Tracey Small BA (Soc Sc), VN, Dip VN (Dentistry)

Fractures are a common problem in dogs presented to veterinary clinics worldwide. Fractured teeth have been found in 27% of client-owned dogs¹ and are often an incidental finding on routine physical examination during vaccination. In dogs presented as referral clients to our practice, the most common teeth fractured are all canine teeth and maxillary 4th premolar teeth. A full article on Fractures and Treatment Options was published in Issue 2 of The Australian Veterinarian. This current article looks at the letter F for Fractures and the treatment option of a root canal procedure.

Sammy, a 2 year old, 21kg, neutered male Kelpie dog was referred to the practice with a complicated crown fracture of the lower right canine (404). The owner noticed the fractured tooth one week ago, however, the fracture was of unknown duration.

Sammy was found to be in good health, well hydrated, heart rate 180 bpm, respiratory rate 32 bpm, body temperature 38.4C. Pre-anaesthetic blood chemistry and haematology profile indicated no significant findings. The nurse placed a 22 gauge intravenous catheter in the right cephalic vein aseptically and administered a balanced electrolyte solution Hartmanns 2.5ml/kg/hr (52.5ml/hr). A pre-anaesthetic of acepromazine 0.02mg/kg (0.42mg), buprenorphine 0.01mg/kg (0.18mg), and atropine sulphate 0.05mg/kg (0.84mg) was given by subcutaneous injection. Sammy was then placed back into a hospital cage for half an hour to allow the pre anaesthetic agents to take effect.

Sammy was induced with diazepam 0.25mg/kg (5mg) and ketamine 5mg/kg (100mg) via the IV catheter, a size 8.5 cuffed endotracheal tube was placed, tied and connected to the anaesthetic machine. Anaesthesia was maintained with the combination of 1.75-2% isoflurane to 1.5% with in 100% oxygen. Anaesthetic monitoring included visual assessment, reflex activity, oxygen saturation, heart rate, respiratory rate, ECG and blood pressure. The nurse monitored these values and recorded parameters every 5 minutes on an anaesthetic monitoring form. IV fluids were increased to 5ml/kg/hr (105ml/hr). Sammy was placed into left lateral recumbency and a warming blanket was placed over Sammy to maintain body temperature.

Once Sammy was stabilised a comprehensive oral examination was performed by the dental specialist and nurse. Overall teeth were healthy, no gingivitis was present. A dental chart was completed, available at www.vetdental.charts.com. A complicated crown fracture of the 404 was present (Figure 1), a path finder file could be placed into the pulp cavity at the fracture site over the damaged cusp of 404.



Figure 1 Complicated crown fracture of the lower right canine (404)

Dental radiographs were taken with a size 2 digital DR sensor plate. Radiograph of tooth 404 showed that no gross abnormalities were visualised other than the fractured cusp of the 404 (Figure 2). The periodontal ligament appeared intact, uniform with a closed apex and healthy bone support around the root (Figure 3). Based on these findings, a diagnosis of a complicated crown fracture of the 404 was made.



Figure 2 – Radiograph of fractured crown 404



Figure 3 – Radiograph root of 404

The owners were called and informed of radiograph findings. It was explained to the owners that treatment would require a root canal of the 404 to salvage the tooth or tooth extraction. The owners consented to root canal therapy.

A mental nerve block was placed by injecting mepivacaine 3% (9mg) into the right middle mental foramen. Access to the pulp chamber of tooth 404 was created by enlarging the fracture site using a No. 4 round diamond bur. A size 15 K-reamer 50mm length file with a rubber endodontic stopper was placed into the pulp to estimate canal length. A radiograph was taken to verify the file was at the apex. A working length of 41mm was confirmed.

K-Reamer hand files #20, #25 and #30 were used sequentially to prepare working length of 41mm by coating the file with chelating agent RC Prep to soften dentine and lubricate the canal. The reamer was then placed into the canal, twisted a quarter of a turn and then pulled out of the canal. This was repeated until the reamer encountered no resistance with the canal and then the action was repeated with subsequent K-reamers through to #30. Residual pulp tissue was removed by placing a size 3 barbed broach into the pulp canal, rotating 90 degrees and then pulling out remaining pulp.

The canal was cleaned and shaped using Light speed rotary system files #35 to #110 set at 41mm with endodontic rubber stoppers. Files were used in sequential order and coated in RC prep to soften dentin and lubricate files.^{2,7} The canal was irrigated and lubricated between file sizes using an endodontic needle attached to a syringe filled with 4% hypochlorite. Recapitulation was performed after each file using a #15 K-reamer. Clean, white dentinal filings were seen at file #90 and #100 when they were withdrawn from the canal. The final file was radiographed to ensure complete shaping of the canal (Figure 4). The canal was then sterilised by filling the canal with the hypochlorite and leaving in the canal for 5 minutes. Hypochlorite was aspirated from the canal followed by irrigation with an EDTA solution to remove any smear layer. The canal was dried using size 90 paper points.



Figure 4 – Radiograph master file 110



Figure 5 – Radiograph simplifil size 100 at apical limit

Obturation of the canal was performed by placing a #100 simplifil plug coated in Sealapex (equal parts base and catalyst) into the canal, a radiograph was taken to confirm it was at the apical limit (Figure 5). The sealer was spun into the canal using a spiral filler until the canal was completely obturated.

A size 60 gutta-percha point, cut 16mm from the end-point, was coated in sealer and placed into the canal with college forceps. Excess gutta-percha was removed with a heated ball burnisher below the access opening. A radiograph was taken to confirm a good obturation (Figure 6).



Figure 6 – Radiograph obturation of canal

Tooth 404 was prepared for restoration by creating an undercut in the dentin within the access hole using a size 2 diamond round bur. The access site was washed and dried. Acid etch (37% phosphoric acid) was applied to the tooth surface with a preloaded syringe and tip for 30 seconds. The acid etch was then removed with a microbrush, washed with water, then dried lightly. The surface area after etching had a chalky white appearance. A thin layer of adhesive Opti-bond was applied to the prepared area with a microbrush, air dried gently to ensure a light, thin, even layer of bond and to the evaporate alcohol before light curing for 10 secs with a LED curing gun. Using a plastic filling hand instrument, a filled hybrid composite 3M composite shade A2 was applied and shaped to cover the cavity and form a functional tooth. This was staged in 2 mm increments to ensure adequate light curing, composite was 4 mm in total.

The restorative was smoothed using four grades of polishing disks attached to a mandrel and placed into the low speed handpiece. Disks were used in sequence from coarsest to finest while the dental assistant cooled the tooth with water. A final layer of adhesive Otibond was applied over the restorative, air dried lightly and light cured. A radiograph was taken to confirm adequate fill of restoration (Figure 7). A photograph of completed root canal and restoration was taken (Figure 8).



Figure 7 – Radiograph of restoration of 404



Figure 8 – Completed root canal and restoration of 404

The patient was left on oxygen until first sign of swallowing, the endotracheal tube was deflated and removed. The patient was moved to a recovery cage, IV fluids were reduced to (2.5ml/kg/hr (52.5ml/hr) and monitored. Half hour prior to discharge, I/V catheter was removed and a bandage placed over the site to assist with haemostasis.

At discharge the client was given a home care instruction sheet regarding root canal, and each point was discussed with the owner. Medications were explained, 113mg firocoxib was prescribed daily with food and Maxiguard gel (chlorhexidine free zinc and Vitamin C formula) was advised to use daily by placing a pea sized drop on both upper canines for regular oral hygiene. A reminder was placed into the computer system to inform owners of radiograph required in 9 months' time. The owners were contacted by phone two days post-surgery, the patient was recovering well with no complications.

Tooth fractures are a common presentation to the veterinary practice.^{1,2} When a tooth fracture has pulp exposure and is left untreated, the pulp will become necrotic and may develop periapical abscess, osteomyelitis, bone loss and periodontal disease that not only affects the fractured tooth but can also affect jaw structure and the adjacent teeth.^{2,7} There are only two treatment options available for this condition, a root canal treatment or extraction.³ If the fractured tooth is assessed to be a good candidate for a root canal, then this is the preferred option as this treatment preserves the function of the tooth and maintains tooth and bone structure.^{3,5,8}

The objective of a root canal is to preserve the fractured tooth by removing infection from the pulp canal and obturating the canal, followed by restoring the crown of the tooth, thereby enabling the tooth to continue to provide function and structure.^{3,6} There is little if any discomfort in root canal therapy and it has a 94% success rate.

An extraction is an invasive traumatic procedure that results in loss of tooth and bone surrounding the extraction site, consequently creating loss of chewing function of that particular tooth, potentially weakening of the jaw and a loss of occlusion with opposing teeth.^{6,7}

Therefore, root canal therapy provides a superior alternative to extraction when a tooth has been fractured with pulp exposure. This is especially true when principal teeth are involved such as the canines, upper 4th premolars or lower 1st molars. These teeth provide structure and function and to extract any of these teeth compromises these factors.^{5,6}

However, not all complicated crown fractures are good candidates for root canal therapy. Radiographs are necessary to diagnose the health of the apex, tooth resorption, a vertical root fracture and whether the canals are inaccessible or sclerosed.^{2,5-7} In these cases extraction is necessary to prevent further pathology occurring.

Radiographs are mandatory in determining treatment plan, throughout the root canal procedure to determine working lengths of the canal and good obturation. In addition, a radiograph is necessary for accessing the success of the treatment 9 months later.^{2,3,6,7}

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INCREASED PROTECTION FOR KOALAS

The Morrison Government is boosting the level of protection for Koalas under National Environmental law, and will seek agreement from Queensland, New South Wales and the Australian Capital Territory on the National Recovery plan.

Minister for the Environment Sussan Ley said the announcements follow a \$50 million commitment to Koala conservation and protection, and represent a comprehensive framework to protect the iconic species.

“We are taking unprecedented action to protect the koala, working with scientists, medical researchers, veterinarians, communities, states, local governments and Traditional Owners,” Minister Ley said.

“As part of our \$200 million bushfire response, I asked the Threatened Species Scientific Committee to consider the status of the Koala.

“I am increasing the protection for koalas in NSW, the ACT and Queensland listing them as endangered rather than their previous designation of vulnerable.

“The impact of prolonged drought, followed by the black summer bushfires, and the cumulative impacts of disease, urbanisation and habitat loss over the past twenty years have led to the advice.

“Together we can ensure a healthy future for the koala and this decision, along with the total \$74 million we have committed to koalas since 2019 will play a key role in that process.

“The new listing highlights the challenges the species is facing and ensures that all assessments under the Act will be considered not only in terms of their local impacts, but with regard to the wider koala population.

“The National plan developed through scientific advice and public consultation will now go to the relevant states for their final adoption and will help guide state and local government strategies.”

The Australian Government is providing more than \$74 million to protect the iconic Koala and ensure its long-term health and resilience, including: \$47 million to protect and restore important Koala habitat; \$8.7 million to support Koala health, genetics research and medical support; and \$12 million for the National Koala Monitoring Program.

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SHIELD is a **"Ready to Use"** **"POUR-ON"** application. Referred to as the "Spot-on" for horses, it utilises its 40g/L Permethrin concentrate by spreading through the waxy layer of the horse's skin. As flies migrate around the horse, it kills them as they land. Easy to apply, it's highly effective and convenient.

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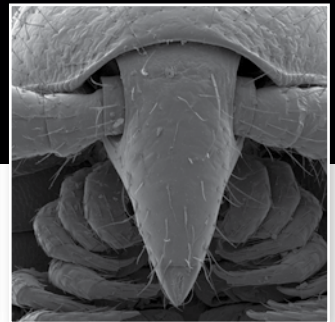
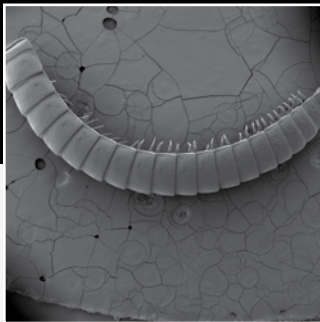


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LEGS FOR DAYS!



The world's first true millipede with more than 1000 legs has been discovered in Western Australia by a team including scientists from CSIRO, Australia's national science agency.

The newly named *Eumillipes persephone* has 1306 legs. Prior to this discovery, no millipede had been found with more than 750 legs.

CSIRO Research Scientist Dr Juanita Rodriguez was one of seven scientists involved in the discovery of the leggiest animal on the planet.

"We've been naming millipedes for centuries, but this discovery is particularly exciting because it's a millipede in the truest sense of the word," Dr Rodriguez said.

The millipede's name derives from the Greek word eu- (true), the Latin words mille (thousand) and pes (foot), and references the Greek goddess of the underworld, Persephone.

The scientists found four members of the new species in southern Western Australia, 60 metres underground, and discovered they have long, thread-like bodies consisting of up to 330 segments. They are up to 0.95mm wide and 95.7mm long.

They are eyeless, have short legs, and cone-shaped heads with antennae and a beak.

As part of this discovery, Dr Rodriguez performed the data analysis from the genome of the millipede to determine what other species the *Eumillipes persephone* was related to.

The work tied into a broader study being conducted by Dr Rodriguez and her colleagues at CSIRO's Australian National Insect Collection in Canberra.

"We are studying the chemicals that millipedes produce to look for interesting molecules that could be used as potential antimicrobials against highly virulent and antibiotic resistant pathogens," Dr Rodriguez said.

"This is important because many of these pathogens are resistant to current drugs, and we need new molecules to treat infections like golden staph and pneumonia."

The discovery of *Eumillipes persephone* was contributed to by Paul E Marek (Virginia Tech, USA), Bruno Buzatto (Bennelongia Environmental Consultants), William A Shear (Hampden-Sydney College), Jackson C Means (Virginia Tech, USA), Dennis G Black (La Trobe University, Australia), Mark S Harvey (Western Australia Museum) and Juanita Rodriguez (CSIRO's Australian National Insect Collection).



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Tiger snakes are a highly venomous snake species found in the southern regions of Australia, this example is hunting for frogs at Herdsman Lake in Perth, Western Australia.

MYSTERY ORIGIN OF ICONIC AUSSIE SNAKES UNLOCKED

New research led by the University of Adelaide has found the first tangible evidence that the ancestors of some of Australia's most venomous snakes arrived by sea rather than by land - the dispersal route of most other Australian reptiles.

In a paper published in *Genes*, the researchers analysed the genomes of two Australian elapids (front fanged snakes), a tiger and a brown snake, and compared them to marine and semi-marine elapid sea snakes and Asian elapids.

They inferred that the ancestor of all Australian elapids had accumulated self-replicating and self-mobilising genes (jumping genes) that were not present in their land relatives but came from another source altogether.

Corresponding author Professor David Adelson from the University of Adelaide's School of Biological Sciences says, "While we know all marine and semi-marine sea snakes descended from a common Australian land-based ancestor, the origin of Australian elapids has been debated for some time.

"Some believe their ancestors travelled by land, whereas others hold the more contentious view that a marine or semi-marine ancestor swam here.

"In our research we found a number of genes that were present in the ancestor of all Australian elapids but could not be traced to a snake ancestor; instead they could be traced to similar transposable gene sequences found in marine life, including fish, sea squirts, sea urchins, bivalves, and turtles.

"This indicates the marine environment transferred the new genetic material into the snakes and offers new support to the argument that the first Australian elapids swam to our shores. They must have previously acquired the new genetic material during an ancestral period when they were adapted to marine life."

The researchers identified 14 distinct transfer events of the new genetic material from other marine organisms, with eight genes uniquely present in the marine and semi-marine sea snake genomes. In the case of the semi-marine snake genome, the acquired genes accounted for as much as 8-12% of the total genome sequence.

"This meant that we could unambiguously determine the major genetic differences between land and marine/semi-marine snakes were a consequence of migration into a marine environment," said Professor Adelson.

"This is the first time that jumping genes have been used to confirm the evolutionary history of any animal species, and this research definitively proved that the common ancestor of all Australian elapids adapted to a marine environment.

"It may also have made it easier for the subsequent land to marine transition of sea snakes."

Story Source: Materials provided by University of Adelaide. Original written by Crispin Savage. Note: Content may be edited for style and length.

Journal Reference: James D. Galbraith, Alastair J. Ludington, Kate L. Sanders, Timothy G. Amos, Vicki A. Thomson, Daniel Enosi Tuipulotu, Nathan Dunstan, Richard J. Edwards, Alexander Suh, David L. Adelson. Horizontal Transposon Transfer and Its Implications for the Ancestral Ecology of Hydrophiline Snakes. *Genes*, 2022; 13 (2): 217 DOI: 10.3390/genes13020217

THE ATLAS OF LIVING AUSTRALIA - MAKING AUSTRALIA'S BIODIVERSITY INFORMATION ACCESSIBLE

The Atlas of Living Australia is Australia's national biodiversity database. It provides free, online access to information about Australia's amazing biodiversity. It supports research, environmental monitoring, conservation planning, education, and biosecurity activities, and is a great way to learn more about the biodiversity in your area.

Effective biodiversity research and management rely on comprehensive information about the species or ecosystems of interest. Without this information it is very difficult to obtain reliable results or make sound decisions.

A major barrier to Australia's biodiversity research and management efforts has been the fragmentation and inaccessibility of biodiversity data.

Data and information on Australian species has traditionally been housed in museums, herbaria, universities, and government departments and organisations.

Obtaining records and data sets from these groups involved considerable time and effort, and often resulted in incomplete information.

To overcome these issues, Australia's biodiversity information needed to be brought together and made easily available in the one place.

BUILDING A COLLABORATIVE TOOL FOR AUSTRALIA'S BIODIVERSITY INFORMATION

A collaboration between CSIRO, Australia's museums and herbaria, universities, and the Australian Government established the Atlas of Living Australia (ALA); a national project focused on making biodiversity information accessible and usable.

The ALA is funded by the Australian Government through the National Collaborative Research Infrastructure Strategy (NCRIS).

Since 2010, the ALA team has worked to aggregate Australia's biodiversity information and make it available online at the Atlas of Living Australia.

Founded on the principle of data sharing – collect it once, share it, use it many times – the ALA provides free, online access to more than 85 million occurrence records¹, based on specimens from natural history collections, field observations and surveys.

These records are enriched by additional information including molecular data, photographs, maps, sound recordings and literature.

This vast repository of information makes the ALA the most comprehensive and accessible data set on Australia's biodiversity ever produced. With additional records and information being added to the ALA on a regular basis, the ALA is constantly growing.

The ALA also features a wide range of powerful, open-source mapping and analysis tools, which allow users to explore and analyse information in new ways.

Over 400 spatial layers let users explore the relationships between species distribution and factors such as rainfall, temperature, soil moisture, political or regional boundaries, fire and vegetation.

A MORE DETAILED PICTURE OF AUSTRALIA'S BIODIVERSITY

The ALA is opening up research possibilities, improving knowledge of our biodiversity, and changing the way environmental management occurs in Australia.

By aggregating biodiversity information and making it more available online, the ALA is assisting scientists, planners, managers and others to create a more detailed picture of Australia's biodiversity, its threats and future.

It allows users to focus on discovering answers to their questions, rather than searching for and managing data. The number of records downloaded from the ALA reached an impressive 19 billion in July 2019, demonstrating the value of this kind of data sharing.

You can find out more about the Atlas of Living Australia at www.ala.org.au



The Atlas of Living Australia is helping us gain a better understanding of Australia's unique biodiversity. © Maratus splendens, Stuart Harris



CORE STRENGTH COULD HELP DOGS AVOID KNEE INJURIES

Agility dogs lacking core strength from routine physical exercise and those participating in activities like flyball may be more susceptible to one of the most common canine knee injuries.

That knee injury is a cranial cruciate ligament rupture, which is equivalent to an anterior cruciate ligament (ACL) tear in humans.

According to a research survey documenting activity and injury odds of more than 1,200 agility dogs, just about any physical exercise seems to lower the risk of rupturing the ligament, but some exercises seem to increase the risk. In addition, the size and shape of the dog - and thereby certain breeds - were also found to be at higher risk.

“Balance exercises, wobble boards, anything that improves the core strength of the dog seemed to lower the odds of a ligament tear,” said Deb Sellon, a Washington State University veterinarian and lead author on the study published in BMC Veterinary Research. “We found fitness matters for dogs just like it does for people, and we haven’t shown that before.”

Sellon is also the founder of the university’s Agility Dog Health Network, which was accessed in the study. By using odds ratios, which is essentially a statistical risk assessment, Sellon and Denis Marcellin-Little, a veterinary orthopedic specialist with University of California, Davis, looked for trends in 1,262 agility dogs - 260 that tore the ligament and 1,002 dogs that did not.



Survey results indicated Australian shepherds and Labrador retrievers were more than twice as likely to rupture the ligament.

In addition to balance and core strengthening exercises activities like dock diving, barn hunt and scent work are associated with a decreased rate of ligament rupture, too.

While regular activity, like swimming, playing fetch or frisbee, walking or running didn't increase the risk of injury, it didn't lower the odds either.

Surprisingly, dogs that competed more frequently in agility events and competed at a higher level on more technically rigorous types of courses were less likely to rupture their cruciate ligaments.

The only physical activities that increased the odds of injury were short walks or runs over hilly or flat terrain on a weekly basis, and many of those injuries were in dogs early in their agility career that lacked core strength from routine physical exercise or at times, rest days.

Training or competing in the new and popular dog sport flyball was found to be the riskiest activity of all activities evaluated in the survey. Agility dogs that also engaged in the sport of flyball were nearly twice as likely to rupture the ligament as compared to other dogs. Nearly 12% of dogs reported to play flyball ruptured the ligament.

The survey confirmed some long-standing and well-accepted risk factors as well. In particular, female dogs spayed before the age of one were almost twice as likely to rupture the ligament compared to dogs that were spayed after their first birthday. Sellon said this is believed to reflect the importance of hormones in developing strong ligaments in young animals.



Rottweilers and Australian cattle dogs were more than four times as likely to tear the ligament.

TRENDS WERE ALSO IDENTIFIED AMONG CERTAIN BREEDS

Survey results indicated Australian shepherds and Labrador retrievers were more than twice as likely to rupture the ligament. Rottweilers and Australian cattle dogs were more than four times as likely to tear the ligament.

Marcellin-Little speculates that could have something to do with the shape of the dog, and maybe its tail.

"Larger dogs doing agility tend to be less balanced, so it is not surprising a Rottweiler or Australian Shepherd may be at a higher risk of a rupture compared to smaller breeds," he said. "The tail could also be a factor; the tail has been proven very important for cheetahs and you can imagine it has a role to play in the overall balance of the dog."

Marcellin-Little said there is still a great deal of research that needs to be completed, but the survey gives veterinarians a place to start.

"This research decreases uncertainty; it doesn't bring certainty, but this one study could provoke thoughts and help us look at potential research areas to target moving forward," he said. "That is the type of research that the Agility Dog Health Network is planning to support."

Story Source: Materials provided by Washington State University. Original written by Josh Babcock. Note: Content may be edited for style and length.

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45,000 MARINE SPECIES ARE AT-RISK – WHAT’S MOST VULNERABLE?

A framework for identifying the most vulnerable marine species will boost global conservation and policy efforts against anthropogenic climate change.

University of Queensland researchers and global marine experts developed the framework by reviewing marine biology literature and categorising a wide range of threats – from climate change, to pollution, to fishing – faced by more than 45,000 species.

Dr Nathalie Butt from UQ’s School of Earth and Environmental Sciences said the research revealed the most endangered species from all threats.

“Molluscs, corals, and echinoderms – hard or spiny creatures such as sea urchins – are truly feeling the impacts in our oceans, facing a diverse range of threats,” Dr Butt said.



Flower Pot Coral (*Goniopora* sp.)

“They’re affected by fishing and bycatch, pollution and climate change. Flowerpot corals – an incredibly fragile but stunning form of coral found in the Pacific and Indian Oceans and the Persian Sea – is one group of species that is especially affected by climate change-related stressors, such as ocean acidification.

“We also discovered that starfish, sea snails and flying fish are increasingly vulnerable to climate change-related stressors, all of which can be found in oceans around the world.

“Roughy fishes are quite vulnerable to the effects of pollution, including organic, inorganic, and nutrient pollution, which was quite a surprise, as they live at a range of depths, including deep sea, which demonstrates how far the effects of pollution are spreading.”

Dr Butt said the accelerating rate of environmental change was a motivating factor for the development of the framework.

“The environment is changing so quickly because of human actions, and we need to use all information available to help us

assess which animals are at risk and why, and to help develop the most appropriate ways to protect and manage them – that’s where this framework comes in,” she said.

“This framework is unique as it uses biological characteristics or traits of marine species to assess their vulnerability to specific stressors or threats with the greatest potential impact, such as pollution, fishing, and of course, climate change.”

Fellow researcher Associate Professor Carissa Klein said this information would allow users to make more informed decisions about how to allocate and prioritise their resources to protect the world’s most vulnerable species.

“Conservationists can use the framework to prioritise resources for their protection and determine which management actions would best protect particular species or groups of species and where,” Dr Klein said.

“We assessed all species and all threats that we know about now across the planet.

“The exciting thing is that we built the framework so that we could accommodate new information, whether that be about new species or information about threatening processes.

“This means that the work can also be applied in particular places to protect the ocean, using more detailed information about the species, and their threats, in that place.”

The project was jointly researched with the University of California Santa Barbara (UCSB) and involved global taxonomic experts from around the world.



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