



Welfare Pulse

Animal welfare in New Zealand and around the world

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Seven years of NAWAC

John Hellström has just retired after seven years as chair of the National Animal Welfare Advisory Committee (NAWAC). He reminisces about the experience.

“When David Bayvel asked me, late in 2008, to facilitate planning for developing a New Zealand Animal Welfare Strategy, it was just an interesting job. I had no idea of his plans to draw me back into the animal welfare world I’d escaped from almost 20 years earlier, when I convinced Agriculture Minister Jim Sutton that he needed an independent Animal Welfare Advisory Committee.

A few months later, when I completed the strategy plan, David asked me to take over as chair of the descendant of that committee. By then I had become captivated by the range of issues, the quality of thinking and commitment of the welfare community, and thus the opportunities to help improve the welfare of our animals.

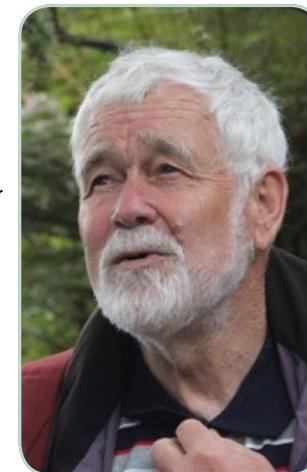
David Moore, one of our leading public policy consultants, described animal welfare at the time as our most complex area of public policy, because it sat at the intersection of such deeply held views on science, ethics, culture and economics – and so it has proven to be.

My immediate predecessors, Peter O’Hara and David Mellor, were both generous with their time and advice, and David Bayvel’s anecdote-filled description of his journey through animal welfare during my 20 years absence was inspirational. There were plenty

of challenges. The three most controversial codes, for pigs, layer hens and meat chickens, were all to be reviewed and there was still a great deal of work to be done on other new and revised codes. As well, there was the review of the Act and moving NAWAC to a broader advisory role.

Peter Beatson provided an early challenge – that NAWAC was timid and unwilling “to take the moral initiative it had, in principle, been accorded by the Act”. I doubt that Professor Beatson will feel that we have risen adequately to that challenge but I believe we’ve given it a good shot. I take comfort that we have significantly improved the conditions under which 30,000 sows and over three million layer hens are managed each year in New Zealand, as well as gaining an amended Act that recognises that animals are sentient and allows for the legislating of animal welfare regulations.

As part of my orientation I discovered and read widely on animal ethics including several books by Bernie Rollin whom I have found to be inspirational. So Bernie’s subsequent fulsome support of our



John Hellström.
Photo by Ned Lyke.

continued...



work has been especially gratifying. His concept of an 'ethical vacuum', created when we are too afraid to talk about things we know are bad and leave others to fill with misinformation and advocacy, remains a challenge to all of our husbandry systems. Bernie also powerfully observed the welfare harm caused by the demise of Animal Husbandry as an academic discipline to be replaced by Animal Science. I was fortunate to have been taught animal husbandry at both a practical farming and at an academic level.

Good husbandry is so central to good animal welfare, and yet we can't impose it through codes of welfare or regulations. I was deeply impressed by Professor David Fraser's proposed solution: to professionalise farming and thus apply professional disciplines to the use of animals. I have heard that concept described as an attempt to license farmers. However, when I reflect on Bernie's ethical vacuum and the erosion of social licence across all farming sectors, I think professionalising farming is the only future safe haven.

There are lots of memories from the last eight years: David Carter being skewered by ambush journalism on the Sunday programme; my witty put-down in the national press of Catriona MacLennan's claims about hens' behavioural need to sun-bathe, only to observe three of my own hens doing exactly that only a couple of days later; the first time I looked into the eyes of a permanently crated sow and saw only a void; having my hand licked by a lion and being amazed at how soft its tongue was; the squeal of delighted horror of my grandson watching a gorilla through a glass wall; the moving retirement speech of Hugh Wirth from RSPCA Australia; Christopher Wathes, then Chair of Britain's Farm Animal Welfare Council, explaining why it was so important for NAWAC to retain its ministerial advisory role; watching my wife kitted out in a survival suit standing on the edge of a Bergen Fiord salmon

farm learning about fish welfare; being welcomed onto the Whangara marae. How special it was for NAWAC to come to the marae of Paieka, the whale rider. Thank you, Ingrid.

But most of all it has been the people: He Tangata, He Tangata, He Tangata: Such great support from the secretariat, particularly Cheryl, Kate, Nicki and Marie – dedicated to animal welfare science but also with such strong animal welfare values and ethical integrity; the thoughtful insights and gentle humour of their managers, David Bayvel and Mark Fisher; the fantastic support of so many NAWAC colleagues but special thanks to Phil, Virginia, Scobie and Karen; the commitment and the passionate expertise of all those young keepers working in every zoo and aviary I visited; the farmers striving to find better ways to manage their animals; the scientists responding to Bernie Rollin's challenge that "science tells what we can do – not what we ought to do" by really pursuing what can be done to make life better for farmed animals; the compassion of those working to rescue and comfort abandoned and abused companion animals and so many more people who simply care about animals. There were more than a few ratbags on both sides of the animal welfare debates as well, but my overwhelming impression is that animal welfare really does matter for most New Zealanders.

As my old friend David Bayvel correctly observed, "animal welfare is a journey not a destination". For me the journey has been engrossing and enriching. It has certainly changed the way I think about how we use animals and I can't see any sign of a personal destination yet. In spite of the views of critics, our society is steadily moving towards improved animal welfare everywhere. It has been a wonderful privilege to be part of that for the last seven years. ”

NAWAC Appointment

Gwyneth Verkerk replaced John Hellström as Chair of the National Animal Welfare Advisory Committee (NAWAC) on 1 November.

This is Gwyn's second stint on the committee, having served as a member from 2003 to 2009. Graduating BVSc from Massey in 1977, Gwyn followed up with a D. Phil (Adrenocortical function in dairy cattle) from the University of Waikato in 1996, and, in 2003, was successful in achieving Membership in the Animal Welfare Chapter of the Australia and New Zealand College of Veterinary Scientists (ANZCVS).

With a focus on dairy cattle, Gwyn's areas of interest have included welfare science, dairy cow stress physiology and reproduction, and the application of technologies into farm systems. Gwyn has made a major contribution to the dairying industry through the Dairy Cattle Veterinarians Society of the New Zealand Veterinary Association, the New Zealand Society of Animal Production, and in several roles on the international front with the International Dairy Federation.



Gwyneth Verkerk.
Photo by Timir Cursons.

Calf disbudding Southland style

Eastbourne Dairy Farm, Southland: An interview with Penny Timmer-Arends

Young farmer Penny Timmer-Arends has been helping manage a dairy farm in Southland, New Zealand for the last three years. When Penny's not in the office working on MPI's Safeguarding our Animals, Safeguarding our Reputation programme, you'll find her down on the farm. During August and September her days are filled with rearing the next batch of dairy heifer calves. We asked her to tell us a bit about it.

Q: So what made you want to get into dairy farming and why Invercargill?

Dairy farming was something I just fell into, but as soon as I started working with the animals I knew it was an industry I wanted to be part of. I'm from the North Island so it's a really nice contrast to be in Southland experiencing first-hand the stunning landscape, southern hospitality and the legendary cheese rolls!

I have the best of both worlds working in MPI's Invercargill office three days a week as an adviser on animal welfare matters, with the rest of my time on the farm. I love the mix and the two roles are quite complementary.

Q: How many dairy cattle and calves do you have?

At 164 hectares, our dairy farm is a fairly average size by New Zealand standards. We milk 500 Friesian/Jersey crossbreed cows and rear around 130 calves every year.

Q: You juggle your MPI work with your farm work. What does your typical day look like?

Every day is busy on the farm, especially during the calving season. MPI is a very generous employer and allows me to take a seven-week leave of absence during calving season.

We milk twice a day, and my role on farm sees me back and

forth between the milking shed, the calf sheds and the support block where the cows are giving birth. Picking the calves up, teaching them to feed, as well as feeding the older calves and tending to any sick calves can take me up to five hours a day during peak. Plus I'll help the manager and the staff with milking and cleaning the shed. Biosecurity – keeping infectious diseases out of the calf shed – is important.

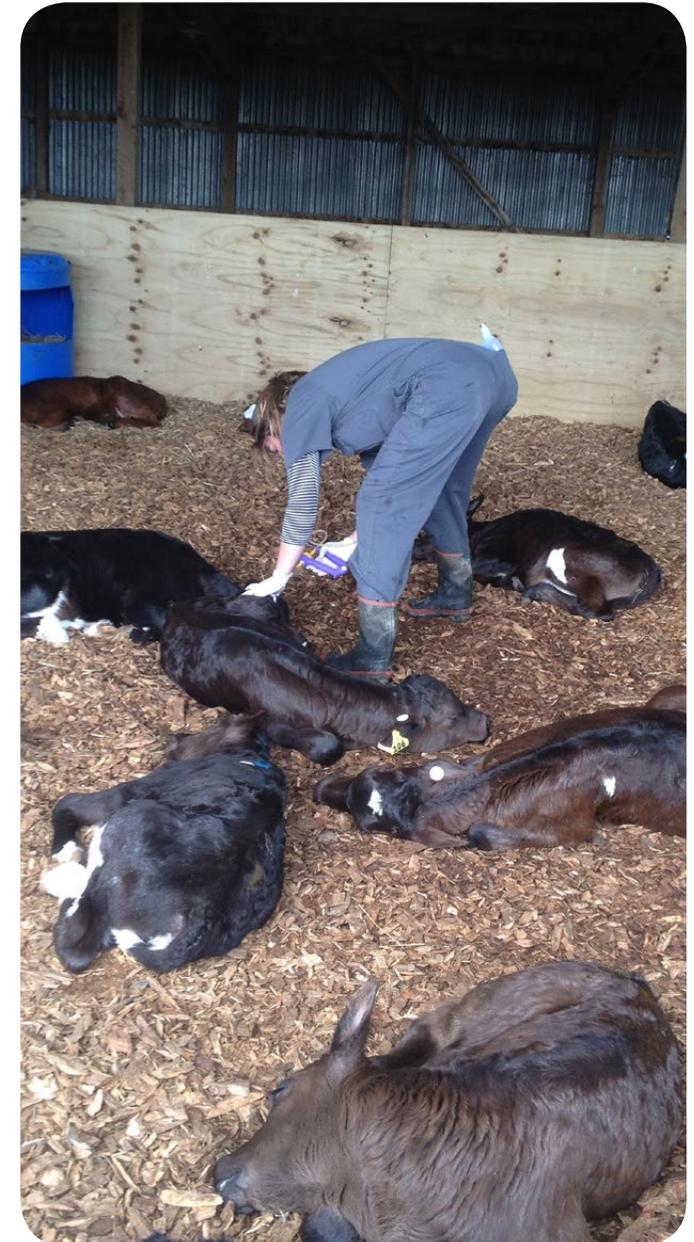
Once the busy part of the season is over, I drop back my hours on-farm, working weekends and a few mornings to give staff time off.

Q: You disbudded your heifer calves. Tell us a bit about that.

This is my third year calf rearing and we've been working with the same vet clinic throughout, so it's a pretty smooth operation. The vets are experts at disbudding and can disbud my 130 calves in around three hours. Only a veterinarian can provide the restricted veterinary medicine required for pain relief. Animals are sentient beings and feel pain, and it's important to us to keep our calves pain-free. There's also anecdotal evidence that calves remember the pain in later life.

The vet sedates the calves before injecting a local anaesthetic. It takes around two minutes for this to take effect before they remove the horn bud with a hot iron. The area is cauterised, which restricts bleeding, then an antibacterial spray is applied to the wound. The sedative lasts around two hours, so staggering the timing of each pen is critical – you don't want calves waking up half way through the procedure. And when they do come round, they're straight back up on their feet and into their normal routine of eating, drinking and sleeping.

While the calves are sedated it's also a great opportunity to do a whole calf health check – navels and ear tags are free



Sedated calves awaiting disbudding. Photo by Marie Guigou.

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of infection, and any supernumerary teats are removed.

Q: Why do you disbud calves and when?

Horns are a safety issue for animals and humans – when cows head butt or lock horns they can cause a lot of damage. Cows can also have issues with pain from ingrown horns.

Horn buds appear in the skin above the skull on the tops of their heads at or soon after birth. They're free floating up to the age of about eight weeks. As the calf grows older, the horn bud attaches to the skull and the horn starts growing as a bony extension of the skull. The best time to disbud is when they're between one and two weeks old when they can be removed more easily. My experience is that the calves disbudded using pain relief are calmer when we perform subsequent painful procedures, e.g. ear tagging, when they're older.

Q: Who can disbud calves?

So long as you have the right equipment and know what you're doing, anyone can disbud, although there is no formal training available unless you're a vet or large animal technician. Only veterinarians can administer the sedative. And with horn buds being so close to the brain, it's not a job you want to get wrong.

Q: What's involved in their aftercare?

Recovery is quick and they're back into their normal routine almost immediately. The only real risk is if the calf develops an infection in the wound – which is not common. But if they do, a topical antibiotic will clear it up quickly.

Q: Is it a costly exercise?

It's relatively cheap in the scheme of things. The cost for us was around \$750 including the vet's labour, sedative and pain relief.

Q: Being an advisor in MPI's animal welfare team, you work closely with the codes of welfare. How helpful have you found them for this disbudding work?

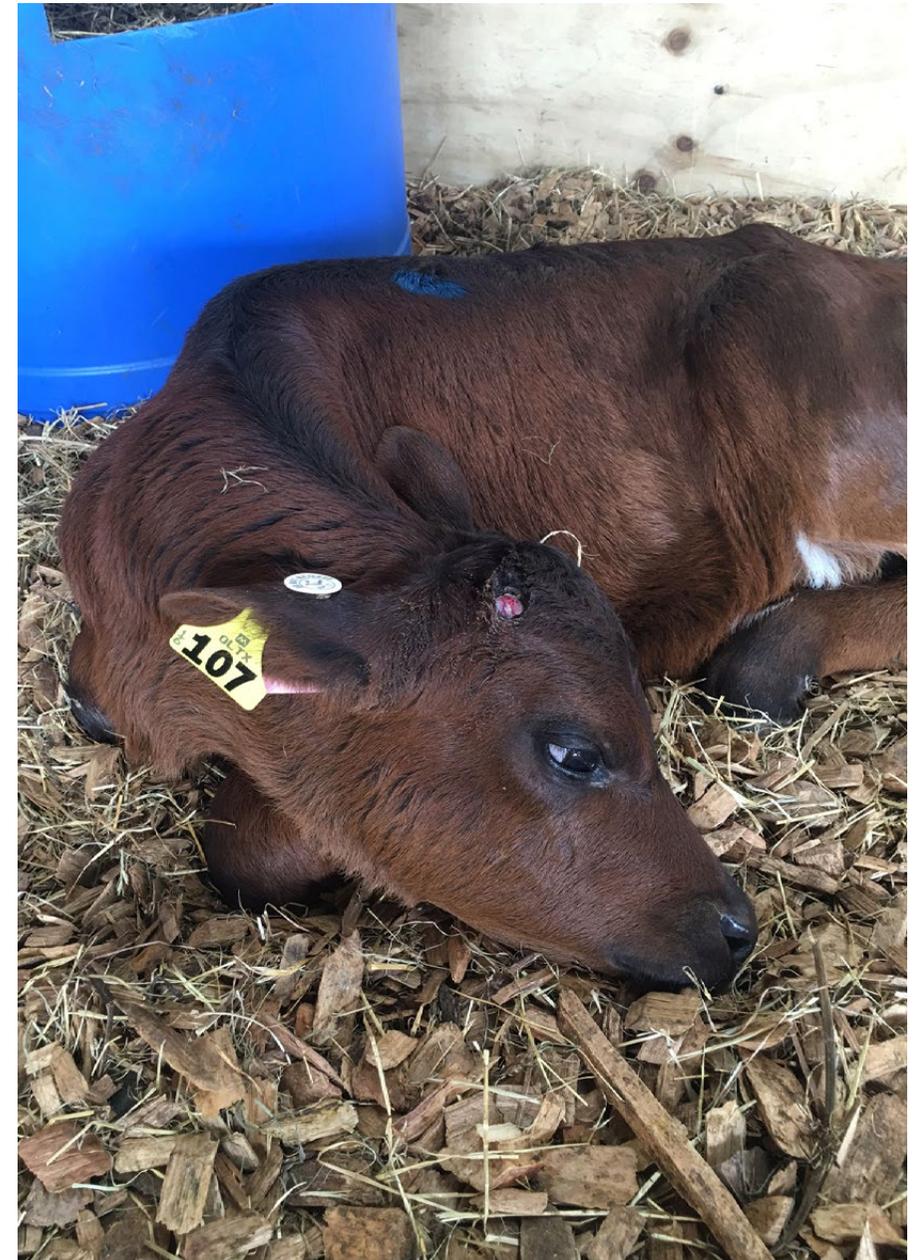
The Animal Welfare (Painful Husbandry Procedures) code of welfare provides a really useful guide on disbudding practices, along with other information about horns and dehorning. It's not a legal requirement to have a vet do this work. But we invest a lot of time and money in our animals and we don't want to inflict unnecessary pain or distress on them, so it's an easy decision.

Q: What were the highlights?

The opportunity to get close up and personal with the calves while they're sedated is pretty special, as well as being able to give them a check-up. There's also the feel-good factor that your calves have been disbudded pain-free.

Q: What were your biggest learnings and is there anything you'd do differently next time?

This was our third year disbudding so we're pretty dab hands at it now. We have complete confidence in our vet who is really experienced at disbudding, knows our herd and understands our approach to animal health and welfare. To see the calves happy and up and drinking soon after disbudding is testament in itself.



Disbudded calf. Photo by Marie Guigou.

Pain relief at calf disbudding leads to faster growth rates

Calf disbudding is a necessity on dairy farms and there is abundant scientific evidence that without pain relief the procedure is painful and distressing to calves, both at the time and afterwards.

Currently in the area serviced by Vetlife, around 50 percent of calves are disbudded by farmers and non-vets without any form of pain relief.

On these farms, it has been difficult to win the argument for mandatory pain relief with cost and inconvenience seen as major hurdles. There is also a widespread belief that any negative effects are short-term.

This article outlines an on-farm trial across two seasons and multiple farms that showed calves receiving pain relief at disbudding grew significantly faster than calves disbudded without pain relief.

As a practice, Vetlife wanted to provide farmers with clear, New Zealand-based data that would persuade them that pain relief at disbudding could have economic as well as welfare benefits. Calves need to grow quickly to meet their target weaning weights. Slower growth increases rearing costs (more time, feed and labour required) and with a potential reduction in lifetime milk yield and fertility. So over a two-year period we conducted a series of rigorous farm-based trials to look at the effects of pain relief at disbudding on growth rate. We found clear evidence that calves given pain relief at disbudding grew faster after disbudding than calves without pain relief. This effect lasted for between 15 to 30 days depending on the form of pain relief used.

In calves receiving sedation and local anaesthetic at disbudding the increase in growth rate could be measured for 30 days. The use of sedation has been shown to reduce the stress of disbudding but it is essential that the local is administered accurately and effectively. Calves receiving just a dose of non-steroidal anti-inflammatory at disbudding still grew faster than calves receiving no pain relief but the effect only lasted for 15 days. Overall, calves receiving pain relief grew approximately 15 percent faster than calves without pain relief.

These trials were conducted across multiple farms and over two different seasons and the effects of pain relief were consistent: faster growth rates. This work removes two common objections to the use of pain relief at disbudding: that the effects of the pain felt are temporary and that pain relief has no cost benefit. Disbudding without pain relief is painful, stressful and reduces subsequent growth rates. Provision of pain relief at disbudding can be cheap, reliable, readily available and will remove these negative effects. So why wouldn't you do it?

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The work behind this article has been presented in an internationally recognised peer reviewed journal and can be accessed at: <https://www.ncbi.nlm.nih.gov/pubmed/25371291> or <https://www.ncbi.nlm.nih.gov/pubmed/27256490>



Injecting local anaesthetic. Photo by Vetlife.

Adult cows with horns are a danger to people and other animals and for the time being the dairy breeds in New Zealand are predominantly horned. Interesting progress is being made however in the selection of animals without horns so that ultimately, disbudding may become a thing of the past.

Update of the development of Animal Welfare Regulations

MPI is in the process of developing a suite of regulations under the Animal Welfare Act 1999. This will be the first time a substantial suite of animal welfare regulations have been made in New Zealand under the Act.

In April 2016, we publicly consulted on a range of regulatory proposals. In total we received 1500 submissions in addition to the feedback received during a series of public meetings held across the country.

As noted in the August edition of *Welfare Pulse*, the regulations specifically relating to the management and treatment of young calves and export of livestock for slaughter have been prioritised. For young calves, those rules relating to blunt force trauma, age and physical characteristics that make calves fit for transport, maximum duration of transport, and prohibition of transport by sea across Cook Strait are now in force, with the remaining requirements to come into force in 2017. The remaining proposals will have delayed commencement to allow farmers, transporters and processors in the supply chain to adjust.



The new regulations for live animal export will take effect in December 2016. For more information see mpi.govt.nz/law-and-policy/legal-overviews/animal-welfare/animal-welfare-regulations/.

We are now progressing the remaining 77 regulatory proposals that were formally consulted on during April 2016. The remaining proposals have been broken down into the following broad policy packages:

- Stock transport
- Companion animals
- Pigs
- Layer hens
- Pain relief
- Para-professionals
- Horses, llamas, alpacas and goats
- Farm husbandry
- Miscellaneous/aquatic
- Dog tails and dew claws

We will continue to work closely with affected stakeholders throughout the development of these regulatory proposals and will be organising meetings during late 2016 and early 2017 to discuss the proposals and any outstanding issues.

For the dog tail docking proposal, we have decided to undertake an additional independent process to assist us in determining the best way forward with this proposal. We will be commissioning an expert to review all of the submissions we have received, along with the Act, code of welfare for dogs and any additional relevant science. We are in the process of finalising a terms of reference document for the independent reviewer.

Maria Cassidy, Senior Policy Analyst
James Kane, Policy Analyst
 Ministry for Primary Industries

Codes of Welfare – update on consultation, development and review since issue 20

Codes of welfare are issued by the Minister for Primary Industries under the Animal Welfare Act 1999. Codes outline minimum standards for care and handling of animals and establish best practices to encourage high standards of animal care.

Reissued Codes of Welfare

- Transport within New Zealand
- Dairy cattle
- Commercial slaughter
- Sheep and beef cattle

Recommended to Minister

- Temporary housing of companion animals

In post-consultation process

- Dairy housing amendment

For a complete list of the codes of welfare visit mpi.govt.nz/protection-and-response/animal-welfare/codes-of-welfare/

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The Three Rs at Massey University

The Three Rs (Replacement, Refinement and Reduction) are basic to the ethical use of animals in research, testing and teaching (RTT) (see sidebar for definitions).

Staff of Massey University's Animal Welfare Science and Bioethics Centre (AWSBC) teach mainly in the areas of animal behaviour, anatomy and physiology, with research topics that include anaesthesia; pharmacology and neurology of pain alleviation; the welfare management of production animals, pets, service animals, wildlife and zoo animals; and humane pest control.

These topics allow many opportunities to apply the Three Rs, with the Centre's success underpinned by staff having received the National Animal Ethics Advisory Committee's Three Rs Award on four occasions:

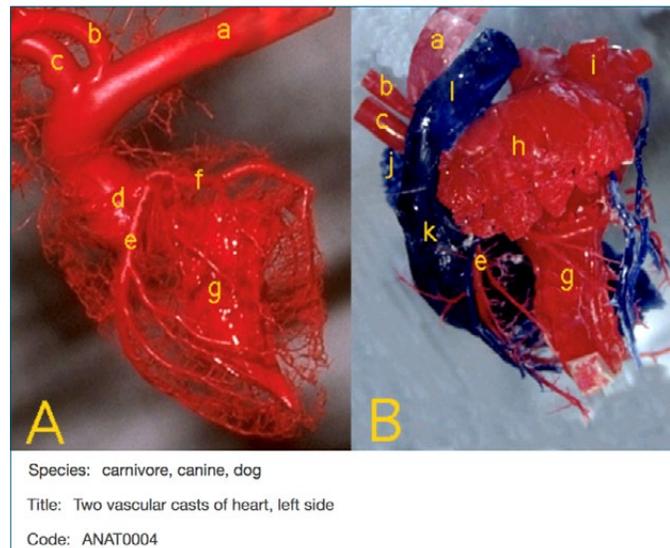
- Alex Davies, 2003 – Developing computer-aided-learning programmes
- Craig Johnson, 2006 – Developing a pain-free model to study pain
- David Mellor, 2014 – Developing the Five Domains Model for welfare impact assessment
- Neil Ward, 2015 – Developing and sharing online computer-aided-learning resources.

The replacement of animals has been facilitated in many ways both at Massey and at other universities, colleges and research institutions. Examples include:

- Using students as animal models for teaching mammalian biology. Examples include measurement of lung function, electrocardiography, electroencephalography and electromyography.
- Using computer-aided-learning interactive programmes demonstrating form and function. Some publishing houses sell computer-based virtual experiments with their texts,

while some institutions develop their own. An example is the modelling of action potential in nerves, which replaces the use of frogs in such experiments.

- Anatomy teaching using 3D printed skeletons and models, as well as plastinated real tissue models which provide long-life animal-free resources.
- Live animal demonstrations being replaced by video tutorials, pictures and animations.
- Computer programmes simulating living animals and systems.



Massey University: Cardiac anatomy – a voice-annotated dissection guide.

Sharing of such computer-based resources can significantly help replace animal use. A number of educational establishments, including Massey University, openly share their online resources, which also serves to avoid duplication of resource development across multiple institutions.

The Three Rs

Replacement – using non-animal (or non-sentient animal) alternatives to achieve the study objectives when that is possible.

Reduction – ensuring that the number of animals used is the minimum that can achieve the study objectives.

Refinement – for those animals that are used, ensuring that the negative impact of any study is minimised in all practicable ways that do not interfere with the study objectives.

See: Massey University

<http://calshare.massey.ac.nz>

Royal Veterinary College Wikivet

<http://www.onlineveterinaryanatomy.net/>

University of Minnesota

<http://vanat.cvm.umn.edu/index.html>

The reduction in the use of animals has been driven by a number of factors. Animal use is costly, with the need to cut budgets as one factor, but ethical concerns among staff and students alike, reinforced by New Zealand's animal welfare legislation requiring application of the Three Rs were the principal drivers.

As values matured, such that most students of animal science now prefer not to have animals killed just for their education, they have clearly seen the value of using technology and multimedia purpose-designed to adequately deliver animal biology experiences. While many resources were created historically from live animal experiments, these have now been captured and are available in perpetuity for teaching.

The refinement principle challenges animal researchers to find new or improved methods for carrying out experiments in ways that reduce impacts on animal welfare. As an example, we in AWSBC are currently developing sustained-release analgesic drug formulations which can be safely administered in wild and endangered avian species. After a single dose of these formulations, the minimum effective concentration of a drug can be maintained for weeks.

We are also exploring properties of some essential nutrients which are needed for normal body function and some peptides naturally present in mammals and which may act as analgesics without leaving and residues in meat or milk, allowing their wider use for pain relief in sheep and cattle.

Massey researchers have also developed a way of measuring responses to noxious stimulation and its reduction by analgesic drugs based on the electroencephalogram of anaesthetised animals. This minimal anaesthesia model means that research into animal pain can be undertaken without any animals having to be subjected to pain, and represents a significant refinement of pain studies in animals.

The Three Rs tenet relates to minimising the negative impacts of each study on living animals. The potential impacts must be weighed against the anticipated benefits of the study, and those benefits must be deemed to greatly outweigh the harms for



Online learning derived from real dog cadaver dissection.

an animal ethics committee to give approval for it to proceed. It is therefore most important that negative impacts should not be underestimated.

The Five Domains Model was developed by staff in the Massey University Veterinary Science Faculty in 1994. This method enables systematic assessment of all impacts on any animal. The Five Domains Model has been a mandatory part of New Zealand's regulatory management of research, testing and teaching (RTT) on animals since 1997, and has been regularly updated since then to take account of the latest developments in animal welfare science thinking. The model is gaining global recognition for its applications to RTT and to other areas of animal welfare interest.

Neil Ward
Senior Technician
Massey University

Codes of ethical conduct – approvals, notifications and terminations since issue 20

All organisations involved in the use of live animals for research, testing or teaching are required to adhere to an approved code of ethical conduct.

Notifications to MPI of arrangements to use an existing code of ethical conduct

- Aakland Chemicals (to use Lincoln University's code)
- Ara Institute of Canterbury (to use Lincoln University's code) (merger of Christchurch Polytechnic Institute of Technology and Aoraki Polytechnic)
- Boffa Miskell Ltd (to use AgResearch Ltd's code)
- Damar Industries Ltd (to use AgResearch Ltd's code)
- McLeod, Graeme & Janelle (to use University of Waikato's code)
- Rich Technology Solutions Ltd (to use AgResearch Ltd's code)
- Spring Sheep Dairy LP (to use AgResearch Ltd's code)
- Starboard Bio Ltd (to use AgResearch Ltd's code)

Codes of ethical conduct revoked or expired or arrangements terminated or lapsed

- Baker & Associates Ltd
- Duirs NZ Ltd
- Wanganui Veterinary Services Ltd

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A day in the life of an MPI Policy Analyst

Tegan Arnold and Nikki Pirihi are two recent graduates working in their first year as Policy Analysts for Animal Welfare Policy at MPI.

Growing up by the beach in Wellington, Nikki was about as removed from agricultural New Zealand as you could get. Occasional visits to family farms provided brief glimpses of the farming world, but not once did working in the primary industries cross her mind as a possible career option. Prior to working in animal welfare, Nikki finished her studies in Law and Social Policy.

On the other hand, raised on a small farm on the outskirts of Tauranga surrounded by a variety of farm animals, Tegan suspected that her career path would one day lead her to work within the primary industries. Tegan joined the Animal Welfare team after finishing a Science Degree through Victoria University last year.

They both came to the Animal Welfare Policy team in January as bright-eyed, bushy-tailed graduates ready to throw themselves into the world of animal welfare, blissfully unaware of how complex the world of animal welfare policy can be.

Within their first week of work, they'd already been given regulations to develop and stakeholder meetings to attend. This was all part of the package of almost 100 animal welfare regulations that MPI has been developing over the past two years. These proposals cover a wide range of issues from bobby calves to donkey tethering, and even eel desliming. In their first week they were inundated with information about things that neither had ever heard of, let alone thought they'd be regulating – Berserk Llama syndrome, for one.

Being thrown in the deep end was a great way to (very quickly) realise how diverse the range of work is in animal welfare policy. One day they can be at the coal face engaging with stakeholders on issues that are likely to heavily impact the industry, while the next, they can be working through the

technical wording of a regulation due to be approved by Cabinet. It became clear to them that as regulatory developers that a lot of importance is placed on interacting with all stakeholders – from on-the-ground farmers to advocacy groups – to understand the issues they're regulating.

The first major team projects they worked on were the development of the calf regulations, and live animal export regulations. Being particularly high profile and emotive issues, these were a great introduction to learn quickly how the process of regulation development worked.

The team they work in is small but tight-knit, and everyone is trusted to have responsibility for their main subject areas. While animal welfare may seem like a limited field to work in, it's important to so many different aspects of life in New Zealand. Tegan was involved in the development of the calf regulations, but is also working in the field of research, testing, and teaching. Nikki has also picked up a role in live animal exports which has exposed her to the intricacies of international law and the effect that good animal welfare policy can have on seemingly unconnected sectors.

Policy folk aren't well known for dusting off their gumboots and getting out on the field. However, staff are encouraged to take every opportunity to get out and about. In the short time that they've been at MPI, they've experienced a day as a stock-truck driver, visited animal research facilities, lent a hand with calf disbudding, docked lamb tails, visited SPCA re-homing shelters, worked at Fieldays and A&P Shows, and received rural mental health training.

While these adventures provide valuable insight into the realities of the areas they're regulating, people also appreciate



Tegan (far left) and Nikki (far right) learning about tail docking using a hot iron on a sheep farm in the Wairarapa. Photo by James Lambie.

seeing them experience what they see and do every day. By taking every opportunity to get out into the field, they've gained a greater understanding of not only the animal welfare system, but the agricultural and international sectors as well.

While the next year looks daunting, with the remaining 77 regulatory proposals being developed, they're both looking forward to sinking their teeth into their individual subject areas: camelids, horses, goats and general animal husbandry for Tegan; companion animals, and surgical and painful animal procedures for Nikki.

So how has working in animal welfare at MPI changed their outlook on life? Tegan thinks one day she will make artisan buffalo cheeses, while Nikki thinks she'd make a pretty good goat farmer.

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AgResearch Animal Welfare Team: Animal Welfare for Market Success

While the Animal Welfare Team at AgResearch has undergone numerous name changes and structural positions within the organisation, it has been carrying out research on animal behaviour and welfare for over 40 years.

The importance of research in this area to support our livestock industries was pioneered by Ron Kilgour at Ruakura Agricultural Research Centre and has continued uninterrupted since.

The Animal Welfare Team currently consists of 10 permanent science staff and a number of post-graduate students.

The main animal welfare capability is supported by AgResearch core funding from the Ministry of Business, Innovation & Employment (MBIE) under the theme “Animal Welfare for Market Success”.

The goal is for core funding to be co-invested with our pastoral industry partners to provide relevant research solutions that will benefit New Zealand. The team uses a multidisciplinary approach to research, drawing on expertise in animal behaviour, physiology and agricultural science.

An important but challenging aspect of animal welfare research is to understand how situations and environments are perceived by the animal. The research results will enable our pastoral industries to provide best practice management guidelines that will help them to stay ahead of increasing public concern and scrutiny, and importantly maintain a social licence to operate.

Recent research has included a significant programme with DairyNZ Ltd to optimise the management of

off-pasture facilities for dairy cows. The use of hybrid on-off pasture systems is increasing in New Zealand, and new knowledge is needed to maintain the welfare of cows within these systems.

A specific outcome of this work is a tool to assist farmers to predict and detect when the condition of the bedding substrate is impacting the ability of cows to rest comfortably.

Another significant project on dairy cows aims to understand drinking water requirements and the relationships with coping with warm weather and productivity. This work carries on from a large body of research the team conducted over many years to understand environmental impacts on cows in our pastoral systems, in both hot and cold weather.

This work highlighted the high desire of cows for shade and cooling even in our temperate summer climate and the negative impacts on welfare and production if not available. It also showed that cows are impacted by wet and windy weather and will seek shelter if available.

Other research has included ways to reduce the impact of painful husbandry procedures such as disbudding and the welfare state of cows at the minimum recommended body condition in New Zealand.

Welfare assessments of specific situations have also been carried out when required such as an evaluation of river stones being used on-farm as a rearing substrate for dairy calves. The work on river stones led to a wider look at the preference of dairy calves for a range of different bedding substrates.



Kids in a temperature preference study. Photo by AgResearch.

continued...

A recent move in animal welfare is to improve the quality of life of animals in our production systems, rather than only focusing on ways to reduce events that are negative to animals. This requires the development of ways to understand when animals are experiencing positive situations as well as negative and we have started a research programme to develop this methodology in calves.

Another significant portion of the Animal Welfare Team's work is on the welfare of dairy goats within a MBIE's and Dairy Goat Cooperative research programme. Dairy goat farming, being a relatively new but growing industry in New Zealand, requires critical knowledge to maintain a strong welfare reputation going forward. Research areas have looked at kid-rearing, health, euthanasia, disbudding, housing and feeding systems. The findings are already highlighting how uniquely different dairy goats are from dairy cows and how we might adapt our management systems appropriately.

Our team is also involved in welfare research of farmed deer with the AgResearch deer team at Invermay in the South Island. This research investigates temperament in farmed deer and its association with productivity. A new programme of work has just started with the aim of understanding links between stress, behaviour and productivity.

An important aspect of the work of the Animal Welfare Team has been to look for opportunities to collaborate with other research groups, both in New Zealand and overseas, to strengthen and increase the impact of our research investment.

A significant partner in this regard is Massey University with whom our skills and approaches align very well, and we are looking for ways to strengthen this linkage for the benefit of animal welfare in New Zealand.

Karin Schütz
Animal Welfare Team
AgResearch



Animal Welfare Education

Demand for improvement to animal welfare continues to grow, but the field of animal welfare science is relatively new. It can be difficult to find training and education, especially to fit around an already busy life. Thanks to dedicated institutions however, there are options available, and I have had the opportunity to extend my education at one of these, the University of Edinburgh, while continuing to live and work in New Zealand.

Training and education specific to animal welfare will help to protect animal health and welfare and ensure food systems are sustainable and acceptable to society into the future. While we have used animals in food production for thousands of years, the field of animal welfare science is relatively recent – the world's first professor of animal welfare (Donald Broom) was appointed by Cambridge University in 1986.

The programme I have joined is also quite new, having had its first round of graduates last year. It's called International Animal Welfare, Ethics and Law, and is a course with the University of Edinburgh's Royal (Dick) School of Veterinary Science.

It was created following demand for a flexible online programme based on their well-known Master's degree in Applied Animal Behaviour and Animal Welfare. It certainly is flexible, with a mixture of recorded and live lectures



Marie Guigou.

(though it can sometimes be difficult to make lecture times with the extreme time difference!) and assessment completed via online projects. I was afraid an online environment might not enable a feeling of connectedness to the staff and students, but it turns out that the technology is now up to the task, and we've even been able to successfully complete group presentations online from across the world.

I've met other students from countries including Australia, Europe, USA, Canada and Hong Kong – many already working in animal industries, allowing for all kinds of different perspectives and experiences in the lectures and discussion forums.

Learning while working can sometimes be a challenge, especially those times when you come home from work just to begin work on another project, but I am grateful for the flexible nature of the programme and the student tutor meetings via Skype.

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If you want to try something like this, the University of Edinburgh has created a free Massive Open Online Course (MOOC) which is available on-demand so that you can work through its material at any time: <https://www.coursera.org/learn/animal-welfare#>

New Zealand is the Land of the Hobbit

– by Professor Temple Grandin

New Zealand is one of the few places in the world where it stays green year round. Recently, I had the opportunity to tour the North Island with Virginia Williams. I drove from Hamilton to Christchurch – it made me realise how different New Zealand is compared to other countries. During my career, I have been in every state in the US, Canada, South America, Australia, and China. When I compare New Zealand to other places, its uniqueness stands out. Being an island, the weather is moderate which prevents boiling hot summers and snow blizzards during the winter. During my trip, I learned that some people in the dairy industry are attempting to copy intensive dairy practices that are used in other countries. This may be a mistake. In other parts of the world, dairy cattle have to be housed inside otherwise they would be buried in snow. Another problem is that feed costs would skyrocket because expensive feeds may have to be brought in by ship.

The hotel I stayed in for the New Zealand Veterinary Association meeting had an exhibit of one of the Hobbit Houses that was filmed in the Lord of the Rings movies. This gave me a flash of insight. New Zealand is the Land of the Hobbit and the dairy industry could really capitalise on this by marketing to the high-end grass-fed dairy market.

This niche market is willing to pay top prices. This would help get the dairy farmers off the roller coaster of commodity milk prices. The prices of all commodities gyrate up and down. It is the same in the grain, oil, metals, and many other commodities. The prices of high-end niche products may fluctuate but it is likely to be more stable. Some people in New Zealand may not realise how unique and beautiful their country is. It is ideal for raising grass-fed dairy and beef. You live in the Land of the Hobbit and you need to be what only you can be. Do not attempt to copy other countries that have cheap grain and more severe weather.

Travels with Temple – where she went

- New Zealand Veterinary Association Conference in Hamilton as the keynote speaker.
- DairyNZ Research farm, hosted by Stuart Morgan, Science Support Manager, and Dr Nita Harding, DairyNZ's Veterinary Technical Policy Advisor.
- Meeting with Gwyn Verkerk as incoming Chair of NAWAC.
- Rick and Sarah Hart's dairy farm just north of Taupo.
- The Managh family pig farm outside Feilding.
- Dinner meeting with Animal Welfare Science and Bioethics Centre staff David Mellor, Kevin Stafford and Ngaio Beausoleil.
- Feilding saleyards, shown around by PGGWrightson's Elisabeth Tocker.
- AFFCO cattle plant, Feilding, with Plant Manager Ann Nuku.
- Massey University, where Temple gave a seminar and visited the Wildbase Hospital.
- Wellington, hosted by the MPI Animal Welfare Team, who organised a seminar attended by around 300 people.
- Hamilton as speaker at the Landcorp conference.
- Douglas-Clifford deer farm, Stoneyhurst, North Canterbury.
- Harris Meats abattoir, Cheviot, North Canterbury.
- Kalimera Perendale stud, Hundalee, North Canterbury.
- Te Mania Aberdeen Angus stud, Conway Flat, North Canterbury.



Temple with DairyNZ staff Stuart Morgan and Nita Harding. Photo by Virginia Williams.



Temple up close and personal with hinds. Photo by Virginia Williams.

Animal Welfare and Rabies Control in the Sikkim Anti-Rabies and Animal Health Programme – by Helen Byrnes, SARAH Programme Manager

I've been actively involved in animal welfare in India for 10 years, initially as a volunteer with Vets Beyond Borders (VBB) Sikkim Anti-Rabies and Animal Health Programme (SARAH) in 2006. I subsequently went to Ladakh in 2008 and Karnataka in 2009, to help with similar VBB programmes.

In 2009, I became Manager of the SARAH programme working with the Sikkim Government who provided facilities and local staff, and Fónation Brigitte Bardot who provided funding. My role and the role of the many wonderful

volunteers of Vets Beyond Borders is part-time, most of the hard work is undertaken by the local SARAH staff particularly Dr Thinlay Bhutia and Dr Diki Palmu Sherpa.

The SARAH programme is a collaborative venture between Sikkim Government, Australian NGO Vets Beyond Borders and French NGO Fónation Brigitte Bardot to control the stray dog population by humane and sustainable means, train local veterinary personnel in veterinary medicine and surgery, and improve animal welfare through advocacy and caring for sick and injured animals.

By involving stakeholders, a successful state-wide rabies programme with a strong animal welfare basis emerged. We aim to make Sikkim Rabies Free, prevent human deaths from rabies in Sikkim, and foster a strong animal welfare culture. All SARAH activities seek to promote and strengthen animal welfare, part of the reason for their success. In recognition of his hard work and commitment, Dr Thinlay Bhutia, local leader of the SARAH programme, was awarded the 2016 World Rabies Day MSD Award for an individual in the field of community rabies prevention for Asia.

Rabies programmes are commonly evaluated in terms of what proportion of the dog population are vaccinated, the number of dog bite incidents, and the number of human and animal rabies cases occurring each year. But the SARAH programme also measures its success in terms of contributions made to animal welfare – how many sick and stray dogs and cats are treated; a commitment to provide the best possible care to every animal; the need for continual improvements in technical skill and knowledge of its veterinarians; the need and opportunities for SARAH staff to share their knowledge with others; the need to be the voice for animal welfare advocacy at all levels of government and within the community.

Community education on dog bite prevention and need for canine rabies vaccination is important in any rabies control programme and community support is essential to its success. In Sikkim, this support and education is undertaken through schools, meetings and public media. Awareness camps are held to educate the public about rabies and distemper. The opportunity is taken to engage the public at every stage of the SARAH programme, from dog catching to dog release and vaccination programme.



Community education about rabies. Photo by Vets Beyond Borders.

A culture of animal welfare in the workplace demands high standards of veterinary care, adherence to protocols and effective utilisation of resources. All team members, from dog catchers to veterinarians, are empowered to be ambassadors for the programme, committed to educating the public about rabies prevention and animal welfare. Staff confidently promote animal welfare concepts and the public expect and accept that animals will be cared for appropriately.

Animal advocacy and mediation to maintain the no-cull policy has also been important when issues have arisen

within the community about problem dogs. The key message that humanely treated dogs are less likely to bite is a powerful tool when working with communities to change societal norms.

SARAH provides medical, surgical and hospital care to hundreds of sick and injured domestic animals and wildlife. Pet and stray animals are brought to the clinic for treatment and treatment is also provided to stray animals on the streets and in villages. This animal welfare work has built trust in the SARAH programme and enabled community education on animal care and rabies control.



Rabies vaccination. Photo by Vets Beyond Borders.

Every year at the Science Week of the Australia and New Zealand College of Veterinary Scientists, the David Bayvel Memorial Award is given to an individual veterinarian whose work has manifestly benefited the welfare of animals. In 2015, Australian veterinarian Dr Helen Byrnes was recipient, honoured for her contribution to humane dog and rabies management in India. The award is sponsored by World Animal Protection, the animal welfare charity for which David was working prior to his death.



Helen Byrnes receives the David Bayvel Memorial Award from Animal Welfare Chapter President Peter Thornber.
Photo: Ryan Rix Photography.



Across our desks

Effect of stress on lamb welfare and meat quality

This study investigated the effect of handling, extended exercise and the presence of a dog, on welfare and meat quality of lambs in a New Zealand setting. Lambs were moved quickly over long distances with a dog (high intensity), or moved quietly over short distances without a dog (low intensity) prior to transport and slaughter. The high intensity pre-slaughter handling regime resulted in behavioural and physiological changes indicative of stress in lambs, resulting in some changes to meat quality characteristics. Reducing stressors experienced by lambs during handling prior to slaughter may improve lamb meat product quality and consistency.

Sutherland MA et al (2016). *Animals* 10: 1360–1367

Maternal care influences beagle puppy responses to novel stimuli

The effect of maternal care on the behavioural responses of eight week old beagle puppies was studied by placing them in a novel environment with an unknown person or in isolation. While no relationship between maternal care and exposure to the new environment and unknown person was observed, isolated puppies that experienced greater maternal care showed a higher level of exploration and reduced signs of stress. This suggests that maternal care mediates responses that allow puppies to cope with stressful situations and better adapt to new environmental conditions.

Guardini G et al. (2016). *Applied Animal Behaviour Science* 181: 137–144

Humanities and social sciences collaborate on research

This paper presents the results of an interdisciplinary group meeting convened to generate a collaborative research agenda to improve laboratory animal science and welfare. Participants, including 45 life scientists, social scientists, humanities scholars, non-governmental organisations and policy-makers, were invited to submit research

questions and vote on their future priorities for laboratory animal science and welfare. Thirty research questions were prioritised and could be used to ensure time and resources are directed to those issues commanding interest across the humanities and social sciences, and where new research can make significant changes in laboratory policy and practice.

Davies GF et al (2016). *PLoS One* 11: e0158791

Practical application of the Five Domains Model to working dogs

The authors of this paper use the Five Domains Model to evaluate the welfare of an injured working farm dog in a fictitious sequence of events. This includes the dog's life prior to injury, the traumatic injury, veterinary examination, surgical amputation and recovery, recuperation in a new home and subsequent life as a pet. The paper highlights how the Model can draw attention to areas of animal welfare concern. It also incorporates the recognition that, in order to consider animal welfare as 'acceptable', the minimisation of negative welfare states must be accompanied by the promotion of positive ones.

Littlewood KE and Mellor DJ (2016). *Animals* 6: 58

Animal-based welfare assessments on NZ dairy farms

If dairy produce from New Zealand is to maintain its position in the global market, animal-based assessment protocols suitable for pasture-based New Zealand dairy farms have to be developed. However, they must be based on overseas protocol so that dairy cow welfare in New Zealand can be benchmarked against the welfare of cows elsewhere. The study investigated the feasibility of applying animal-based welfare assessments developed for the use in Europe on New Zealand dairy farms. The authors conclude that although animal-based assessments can be used, they need to be modified from those developed for housed cows before they can be used routinely on pasture-based dairy farms in New Zealand.

Laven RA and Fabian J (2016). *New Zealand Veterinary Journal* 64: 212–217

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