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Plastic fantastic – tragic!

A study of the use of plastic materials in birds' nests

Kate Higham

Abstract

This article reports on a study of the use of plastic materials in birds' nests. It was inspired by the horrible discovery of a Starling (*Sturnus vulgaris*) chick that was found to have died while trying to fledge because it was entangled by plastic twine that had been used as nesting material. The physical injuries that the chick suffered indicate a drawn out and agonising death. The study was guided by the hypothesis that birds of various species, in Macandrew Bay and surrounding suburbs of Dunedin, use plastics left out in the environment by humans, as nest building material. A sample of recently abandoned nests was collected from the study area during the autumn of 2013. Nests that may have still been in use were photographed and left *in situ*. The sample of seventeen nests was analysed for species of bird, evidence and extent of the use of plastic in nest construction, and the purpose of use (nest structure, lining and internal/external use). The study revealed that 14/17 (82.4%) of

nests, constructed by both native and non-native species, contained some form of plastic. The most common use of plastic materials was for nest structure. The study concludes that the inappropriate disposal of plastics has had significant (and potentially deadly) consequences for suburban birdlife. A series of recommendations based on the findings of the study are presented and conclusions drawn.

Introduction

This science project reports on a study that examines whether birds use plastic from the environment to build their nests. Using Macandrew Bay and surrounding areas as the study area, it analyses nests built by a variety of bird species to determine if plastics are used on a frequent basis. I am very concerned by plastic pollution in our environment and how it might be affecting our wildlife. When I was 10 years old, two starlings built a nest in the roof of our garage. Over the next few weeks I watched them raise three chicks. Later on, once the chicks had fledged, I went to check on the nest and

found one of the chicks hanging dead by a piece of baling twine. Its left leg had become tangled in this deadly plastic, and when the healthy chick had come to fledge, it had been trapped. As a result of plastic it appeared that the chick had almost ripped its own leg off while trying to fledge (Figure 1). I was sickened by the sight, and wondered whether other species of birds were using plastic in their nests, and possibly suffering the same fate.



Figure 1

Research Context

Around the world in spring, every year, birds begin building nests in which to lay and incubate their eggs before raising their chicks to the age of flight. They use twigs, leaves, dead grass, feathers, mud, moss, pebbles, spider web silk, animal fur or hair, and other natural materials to create a secure nest (NZ Backyard Birds, 2013). Many plastic materials, left out by humans, also end up in bird nests. To a bird, grocery bags, fabric, yarn, baling twine and many other plastics all look like the perfect nesting material.

Plastics are usually long, flexible and seem like the perfect material to hold a nest together. It would seem possible that birds all around the world may die from having plastic in their nests. Plastic may not always affect adults; however there are many ways that having plastic in their nests can be deadly for the chicks. They could become trapped. Research on Gannets suggests that a small number of adult birds as well as chicks die from entanglement in plastic woven into their nests (Laist, 1997). They could see it as food and choke. When it rains, natural nesting materials drain but plastics retain moisture that may lead to either eggs being damaged or chicks being subjected to various fungal and other infections (Plastics part of the avian world in Ooty-The Hindu).

The other problem is that plastics do not break down and never seem to disintegrate. It is well known that

plastic rubbish is polluting the oceans all around the world (Allsopp, Walters, Santillo & Johnston, 2006). On land, too, the same plastics can carry on affecting birdlife (and other wildlife) year after year. New Zealand has a clean green image. Is plastic rubbish in the New Zealand environment being used by birds here for nesting as it seems to be in other parts of the world?

Methods

Hypothesis: Birds of various species, in Macandrew Bay and surrounding areas are using plastics left out in the environment by humans as nest-building material.

The methods involved identifying and studying a sample of birds' nests in Macandrew Bay and surrounding areas. Data collection took place in April, May, June and July 2013. The autumn and winter months were chosen to make sure that the bird nests had been abandoned and were not in use. Bird nests were identified using three methods:

1. Search and locate bird nests in our garden.
2. Search and locate bird nests at our local school (none were removed, only photographs were taken)
3. A notice was put in the Macandrew Bay School newsletter asking families for information relating to the location of bird nests.

Bird nests were observed to ensure that they were NOT being used. The nests were left in place and remained undisturbed wherever possible. One nest was found in a hedge that was being cut by a Macandrew Bay resident. One nest from Fairlie (South Canterbury) was also analysed. It was found on the ground at the park. A total of 17 nests were included in this study. Identifying the species of bird that had built the nest was determined by comparison with images of specific nests on the Internet or by observation of the parent birds when in use (Table 1).

Results

Of the seventeen nests that were analysed, fourteen (82.4%) contained plastic of some form. The plastics had been used for various nest-building purposes, including lining, structure, exterior and one of the nests (built by a Piwakawaka, *Rhipidura fuliginosa*) actually used plastic to thread the nest to the branch it was attached to (Figure 2).

All species of birds, both native and non-native, used plastics in their nests. A wide variety of plastics, including sheet plastic, baling twine, string and plastic wrapping, were used in the nests (Figures 3 and 4).

Table 1. Summary of data

Nest number	Location	Plastic present	Form of use	Species of bird
1	Garage	Yes	Nest lining	Starling
2	Marion St. Macandrew Bay	Yes	Nest structure	Blackbird
3	Marion St. Macandrew Bay	Yes	Nest lining	Blackbird
4	Marion St. Macandrew Bay	Yes	Exterior	Bellbird
5	Macandrew Bay School	No	N/A	Blackbird
6	Newbury St. Company Bay	Yes	Threaded	Piwakawaka*
7	Newbury St. Company Bay	Yes	Nest structure	Kereru
8	Newbury St. Company Bay	Yes	Nest structure	Blackbird
9	Newbury St. Company Bay	Yes	Nest structure	Blackbird
10	Macandrew Bay School	Yes	Nest structure	Thrush
11	Macandrew Bay School	Yes	Nest structure	Thrush
12	Macandrew Bay School	Yes	Nest structure	Silver eye
13	Luss Road Company Bay	No	N/A	Piwakawaka
14	Dixon St. Macandrew Bay	No	N/A	Blackbird
15	Macandrew Bay School	Yes	Exterior lining	Starling
16	Fenton St. St. Clair	Yes	Nest structure	Silver eye
17	Fairlie Park	Yes	Nest structure	Silver eye

*Related to Australian Grey Fantails



Figure 2



Figure 4



Figure 3

Limitations

1. My project only studied whether the nests contained evidence of plastic, not the extent of the plastic or if the plastic affected the chicks that may have been raised in the nests.
2. There was a small sample of only 17 nests. A more thorough study would need more nests to be analysed.
3. I lacked the knowledge or experience to confidently identify the bird species based on the size and design of each nest.
4. I had a limited sample of nests built by native bird species. It would be interesting to know more about the impact of plastic in the environment on New Zealand's native birds.

Recommendations

1. Check your garden and local surrounding areas to make sure that it is as free of plastic rubbish as possible.
2. Take special care to remove all forms of twine as it can be deadly for chicks and appears to look like the perfect nesting material to adult birds.
3. Leave natural materials around your garden during spring to provide birds with plenty of safe and appropriate nesting material. Gather it together and hang it from a tree or bird feeder. These should include:
 - Twigs, sticks, dead leaves
 - Cotton balls
 - Straw, grass clippings, pine needles or dead grass
 - Spider web silk
 - Human hair
 - Animal fur (that hasn't been treated for fleas)
 - Pebbles or small rocks
 - Feathers, mud, moss etc. (<http://birding.about.com/>)
4. Minimise your use of plastic.
5. Recycle all plastics.
6. Do not buy products that use non-recyclable plastics.
7. Dispose of all plastics appropriately – when plastic is left in our environment it can be deadly to our birdlife!!
8. Tell all of your friends/family members to do the same!

Conclusions / Discussion

The extensive use of plastics (particularly twine and string) in some nests appeared to pose a particular threat to chick entanglement. The results of this study highlight the serious environmental threat posed by the inappropriate use and disposal of plastics in our society, and the potential harm that this causes our community birdlife.

The results of this study confirm that birds are using plastics, left out in the environment by humans, to build their nests. Birds have been building nests for thousands of years. Plastics are relatively new in the environment. Although they were first introduced as early as the 1860's, plastics have been used in many ways since the 1950's. We all need to be more aware and concerned about dangers that arise when plastics enter our natural environment. THIS IS SERIOUS!!

It is well known that introduced predators and loss of habitat have the biggest impact on our native bird numbers. As plastic does not breakdown in the environment, plastic waste has the potential to continue

to grow in the natural environment. The threat to animals and birds is real and people need to put a stop to it. New Zealand is not as clean and green as we think.

References:

Allsopp, M., Walters, A., Santillo, D. & Johnston P. (2006). Plastic Debris in the World's Oceans. Retrieved 10 August 2013. http://www.unep.org/regionalseas/marinelitter/publications/docs/plastic_ocean_report.pdf

Laist D.W (1997). Impacts of marine debris: Entanglement of marine life in marine debris including a comprehensive list of species with entanglement and ingestion records. In: Marine Debris. Sources, Impacts, Solutions. J.M. Coe and D.B. Rogers (eds.). Springer-Verlag New York, Inc., pp. 99-140.

Editor's Note

ANZCCART (NZ) awards prizes each year at regional School Science Fairs. Last year in Dunedin, the Otago Science Fair displayed 283 entries from 311 students. The breadth and scope of these projects was most impressive. The judges were captivated and intrigued by the science and vision presented by Katie Higham, a 12 year old Year 8 student from Tahuna Intermediate School in Dunedin and so she was awarded the 2013 ANZCCART prize. Furthermore, the judges felt that this young scientist's work deserved publication and Katie was delighted at the prospect; she quickly recast her report to share with the ANZCCART community. These Fairs are an encouraging indicator of the many well-framed questions the next generation of scientists are thinking about. Our support of their developing interests is important. We trust that readers will enjoy this article by Katie. (Award judged by Dr John Schofield.)

ANZCCART at Queenstown in 2014

Pete Hodgson

It was without doubt a good conference. Some said it was a very good conference, some said it was 'good but' and others said it was the best ever. Whatever they said it was, by popular acclaim, a good one.

Why? What made it a 'good' one? What can we capture and clone?

For this delegate what made it good was that it changed me a bit. My perspectives were honed, my prejudices

were challenged, my knowledge was advanced.

There were no Damascus moments, no revelations. There was just the quiet pleasure of getting to grips with this or that point of view. Just the empowerment of knowing with greater clarity what needs to happen next.

Surely that reflects well on the speakers. The standard seemed both very high and very consistent to me. Parts of a couple of presentations I couldn't make sense of; they were for research scientists. The rest were not only accessible, they were more often than not riveting. Clarity was hewn from ambiguity; sense from noise; priority from clamour.

The ethical aspects of good experimental design and experimental practice emerged as the conference theme. The flip side was the unethical consequences of woolly thinking, shortcuts or sub-optimal standards. Animals are inevitably, somehow, wasted. Unethically. That conference theme was not as the organisers had intended. I know because I helped organise it, and we didn't have a theme. But, inexorably, that is the theme that emerged.

How can we ever again give ethical approval to an application in which randomness, blinding, sample size and the basics of good experimentation have been inadequately addressed?

It was not just the standard of the presenters' content. The thought that had gone in to each speaker's presentation was clear. ANZCCART delegates have different experiences and skills; 'heterogeneous' is an adjective that springs to mind. Yet speakers ensured that their delivery was crafted so that it held all parts of their audience, and they should be thanked and congratulated for that.

A lot else happened too. Wild animals featured. During the opening dinner at Walter Peak Station a veteran wild life film-maker showed orphaned Orang-Utan footage that left most folk slack around the mouth with laughter and dismay. We contemplated the scourge of palm oil aboard the SS Earnslaw on the way home.

By the time we reached the workshop session called "Ripley's approve it or not!", we had to confront whether or not, as mock animal ethics committees, to allow the Copenhagen zoo authorities to kill Marius the young adult giraffe. At the closing dinner we were placed on the horns of a dilemma again, in a delightfully challenging way, about the role of context, our subjectivity, or even speciesism (which understandably does not make it through my spell-check). It was fun. I am still enjoying it. Sort of.

Another thing was at play at this 'good' conference. It was us, the delegates, and our collective response to events. We were all genuinely attentive and appreciative in the conference sessions. But at lunch, if one took time to listen, there were dozens of engaged, thoughtful or raucous conversations, as often as not taking part amongst strangers. It was a happy set of sounds. I enjoyed them again and again.

I have made it almost to the end of my observations without singling out anyone by name. But Gill Sutherland did more towards the organisation of this conference than anyone and good organisation contributes a lot to a 'good' conference. Gill has been ANZCCART –NZ's secretary, 4 hours per week, for 22 years!! We are grateful. We are about to miss her a lot (though her successor, Marc Rands, is starting to shape up rather well).

We had a 'good' conference, and the venue was Remarkable. But if I am allowed to influence a future conference, I would say that the innovation that ought to become permanent is the one that leaves a slot open for 'delegate's choice'. Eight folk asked to fill those slots. We had 10 minutes each. I was one of them. We were not the best presenters.

But we were able to tell our story or we were able to progress something that had arisen earlier in the conference. More pertinently, the idea of a 'delegate's choice' gave legitimacy to the organisers' claim that inclusiveness matters.

How could it not?

The following essay was submitted in response to the ANZCCART New Zealand offer of awarding a fully sponsored trip to the 2014 ANZCCART Conference for the best essay submitted by a currently enrolled Australian or New Zealand Undergraduate Student and was judged to be the winning essay. Each Essay was allowed to be up to 3,000 words in length and had to address one of the following topics:

1. "Science seeks to benefit society but you wouldn't know it: Is society resistant to the use of animals in research and teaching and, if so, why?" or
2. "Science takes place in society and must therefore gain the approval of that society to use animals in research and teaching continually."

Conversations to Improve Animal Welfare in Research and Teaching

Kate Reid

Society is composed of individuals and personal ethics are a choice made on an individual basis. These individual choices coalesce to form the societal ethic. The societal ethic becomes the basis of the acceptance or rejection by society of a practice such as the use of animals in research and teaching. It is by influence on the individual that science gains its approval. These opinions of the individual are formed from numerous and nebulous factors. Because the knowledge and experience of the individual is the basis for their decisions, the influence of science must be to affect that knowledge and experience. That influence is exerted in conversation. Through literal and figurative conversations ideas are exchanged and the reasons for decisions are considered. These conversations take place among the members of society, some of whom are themselves scientists. Many of the most important conversations are commonplace and mundane. Other conversations are dramatic taking place in print and media. Conferences, seminars and meetings are the venues for more conversations. But always conversations occur between individuals who are members of society. In some conversations the individuals are scientists. Sometimes scientists talk to non-scientists. And non-scientists will converse among themselves. All of these conversations form the basis for the personal decisions on ethics which provide continued acceptance of the use of animals in research and teaching.

From individual knowledge and personal experience conclusions are drawn and this is the basis for personal ethics. The knowledge and experience of individuals is extraordinarily diverse. For scientists, the training and experience of the discipline is a strong influence on their personal decisions about animal use. Part of scientific training regarding the basis for animal use includes the principle wherein cost to animal health and welfare is squared against the benefit derived from the use. Reduction, refinement and replacement are equally important principles which seek to maximise this equation and gain the greatest benefit for animal cost. These are good principles and their application is an important ethical justification for continued use of animals in research and teaching. But these principles must not be employed without careful consideration and understanding of the meaning behind them. Unconsidered reliance upon conventional principles is not sufficient to ensure continued acceptance by society. In application such principles must be vibrant and living practices and not be allowed to stagnate

and harden into unconsidered dogma. Scientists are also individuals within society and not a separate or opposed entity. Scientists embrace scientific values and these values become part of the basis for societal acceptance. But not all scientists share identical background and variance occurs among the opinions of scientists as to the ethics and acceptance of animal use. Acceptance of animal use by scientists is a part of societal acceptance and a significant influence but not the entirety. By thought and discussion, these concepts will be kept alive in the minds of scientists. These principles will serve as some of the topics for conversation.

As with scientists, acceptance by non-scientists within society is based on the particular knowledge and experience of the person. There is also a factor of visceral reaction and emotional perception of the question. The particular acceptance or rejection by an individual is generally not based on direct experience of the realities of animal use and welfare of animals. It is also highly unlikely that the individual decision about acceptability of animal use is based on understanding of the benefits gained. Essentially, non-scientists do not apply the same principles that scientists are trained to use. So upon what does the average individual base their decision?

The cynic will say that non-scientific opinions are based on emotional and irrational reactions. They will contend that the emotional reaction is due to lack of scientific education or direct experience. They will further put forth that the average member of society is unwilling and uninterested in education or a greater appreciation of the realities of animal use. This same cynic will likely conclude that the acceptance or rejection of animal use by society should be based on strict application of scientific rationale and valueless science. This, in their opinion, is the only way to derive the single correct conclusion in a given situation. The fallacy of this argument is that even scientists cannot agree on correct application of the scientific method and rational evaluation by multiple parties does not always reach the same conclusion in any given case. Furthermore, science is not without emotion. Scientists too have an emotional response but training reduces the influence of this. The response is reduced but not eliminated. Scientists are human and, however logical and calculating, they still feel emotions about the work in which they engage and the animals which are used in that work. Misuse of animals in any context will affect scientists as human beings. That reason alone is sufficient to motivate scientists to carefully consider the welfare of animals used in their work. An emotional reaction is also not entirely irrational. Human emotions have evolved for survival. Emotions in favor of improving

animal welfare can be argued to be self-protective. Humanity existed as an agrarian society for millennia and depended upon hunting since before the advent of agriculture. Before humans ate animals and kept warm in their skins they depended upon an ecosystem which relied upon healthy and vibrant animal populations. The inherent desire to protect animal species is not entirely irrational and can be thought to be based upon the human symbiosis with the other animal species. Conversation is the tool by which each party comes to appreciate the emotional reaction of the others.

The pragmatist will say that animal use is a strictly mathematical cost versus benefit equation where the pain or damage inflicted on animals must be weighed strictly and mathematically against the benefit derived. The evidence of benefits to society gained by the use of animals in research and teaching is undeniable and exhaustive. The average individual, a critical decision maker about the acceptance of animal use is largely unaware of the extent to which animal use has benefited them. Even scientists are not completely informed about the extent to which their lives have benefited from animal based research. Scientists are also insufficiently informed of the negative aspects of animal use. The apparent equation becomes imbalanced and does not reflect the reality which it attempts to judge. The ability to solve the equation accurately is further impaired by the lack of understanding on both sides of the equation; cost and benefit. The effects on society for good or ill will not be determined except in the context of history. It is impossible to know how the benefit from animal use will weigh ultimately. In practicality, lack of understanding of animal physiology and management makes accurate evaluation of animal welfare precarious. Knowledge of animal pain and the experience of suffering is changing and improving continually. Judgment can only be based on the most recent understanding and the future will undoubtedly show that understanding to be deficient. Conversations among individuals will weigh this balance in a way that accounts for, evaluates and incorporates the grey areas.

One current conversation puts forth that greater transparency in animal based research would benefit public understanding and thus promote acceptance. The thought is that if society were more clearly aware of the realities of animal use then they would be able to make informed decisions. Decisions would be based on logical evaluation and understanding of animal welfare. It is unlikely that greater awareness by non-scientists of the realities of research for animals will improve the welfare of animals. Society is generally not prepared to learn how the sausage is made. There are harsh techniques and uncomfortable realities of animal use of which non-scientists are

not aware. Showing society the harm that is done without sufficient realization of the benefit derived is likely to create a strong and justified negative reaction to the techniques employed in research. This negative reaction by some members of society would not support the continued use of animals, even research for the benefit of animals. Lack of continued veterinary research would impact animal welfare negatively. Veterinary research is absolutely necessary for better understanding of the needs and physiology of animals. If improvements in the welfare of animals used in research and teaching are to be made, veterinary research is a necessity. By the fact that the superficial appearance of animal use would likely be uncomfortable to the uninitiated it can be concluded that there are important improvements which must be made in animal welfare. This reinforces the importance of societal acceptance of animal use and motivates the need to engage in conversations. To reprise the three R's principles of animal use, conversation represents an important tool in refinement of animal use in teaching and research.

The purist will put forth that the acceptance of society is based upon the quality of research and that only from high quality research can relevant results be obtained. They will further add that any benefit to society is only derived from research that is applicable and relevant to society. These individuals will contend that both sides of the cost-benefit equation are dependent on quality of work done and analysis performed. The purist forgets that conclusions derived from data are subject to interpretation. These conclusions are in turn based on analysis of raw data and that analysis is subject to the style and influence of the primary investigator. It can be startling to realize how science is not, in actuality, fact. Society believes that an observed phenomena, measurable and recordable, must be real. Society and science both accept that once something is published in peer reviewed literature, it becomes practical fact. Better scientists see the influence of analysis and interpretation and understand the process of scientific investigation in elucidation but not proof. Science contends that this method is the best available representation of reality. This is a leap of faith, though oddly logical. By faith, science becomes religion and subject to dogma. But any observation, measurement and recording is still only subjective. Scientific investigation into cognitive neurosciences and the mechanisms of consciousness reveal that reality is perception. An observed phenomena is subject to perception and is an individual experience. Observation therefore is a personal experience, different for every individual. Measurement and recording equally are interpretations which require analysis. Science itself undermines its own essential tenants and the

dogmatic are forced to resolve the discrepancy. As science develops and progresses human knowledge of consciousness, the faith in science as fact will be challenged. Acceptance by society will change to accommodate. Conversation will benefit all parties as understanding of the mechanisms of human cognition change. There are direct implications to the ethics of animal use for human purposes. These will come forward as science reveals more about the nature of human and animal consciousness. New understanding will change how all view animal welfare and the relationship between humans and animals. It will be a radical change in thought for all parties and continued conversation will be essential for all to resolve the issues that will surround the new understanding.

Understanding of the subjectivity of perception promotes humility. The intent here is to demonstrate the variety of perspectives and opinions in order to appreciate the reasoning behind individual decisions. It is also to show that no single perspective is the correct approach. The acceptance of society is a synthesis of varied perspectives with the advantages and disadvantages of all. The function of conversation is to express, develop and share positions, examine fallacies and failures as well as the strengths and to organically create a community and society opinion from the mosaic of individual perspectives.

Engaging in conversation has several important functions. It is necessary to learn and experience the opinions and perspectives of others as well as learn important knowledge from the experiences of others. It is also necessary to debate and be coerced into articulation of logical arguments. Arguments require support with reasons and rationale and communication of these forces their examination. By explaining opinions to others, insight is gained on both sides as to the reasons for decisions. This practice moves decisions away from dogmatic authoritarianism to insightful, and carefully considered choices based in reason with due respect given to emotion. Conversation also induces self-analysis and promotes a critical evaluation of personal practices and beliefs. Most will have to examine their own practices if they are to confidently argue for those practices to others. As an example, a scientist who cannot comfortably discuss the animal techniques used in their lab with others including non-scientists will be forced to begin to examine those techniques. They will have to critically evaluate if they are in fact based on ethical decisions about animal use. The mutual exchange aspect of conversation also serves to communicate ideas between parties with different experience. Participants in the conversations gain empathy for others' point of view and in return allow

empathy from others. These benefits will ultimately be crucial to ensure the continued use of animals in research and teaching.

Conversation and debate with non-scientists is important for the scientist as a member of both society and of the scientific community to which they belong. It is all too easy for any person to only engage with those who share their ideas and values, such as scientists discussing animal use only among other scientists. Such conversations in isolation are unlikely to produce fruitful progress and will not serve to improve the acceptance of animal use by society. Because science is an integral part of society and functions within society, scientists cannot remain isolated and removed from that society. Conversations with the broader group will promote a greater understanding of society's values by members of the scientific cohort. If science is to continue to function as a valued part of society, scientific values will need to incorporate societal values. This conversation will also work for promoting understanding of scientific values by non-scientific portions of society. It is the propagation of this greater mutual understanding which is one of the key functions of conversation and critical to the continued use of animals in research and teaching.

Conversation must also take place within the scientific community. There is no doubt that for the greatest benefit to be derived with the least cost to animal welfare, science must be of the highest quality. The debate must continue as to what constitutes high quality, relevant research. Individual scientists will need to embrace the importance of research quality and move beyond mere acquiescence to authority. Individual scientists need to determine for themselves what constitutes quality research and implement this because it provides the greatest benefit, not because they suffer penalties otherwise. Conversation within scientific society will be necessary for individuals to understand what is quality science, how to implement good practice and the importance of this.

Exchange of ideas, as occurs in conversation also serves to improve education of all participants. The cynic was convinced that society was unwilling to self-educate and keep themselves informed. By conversation, the uninformed gain valuable insight and improve the breadth of their experience. In turn, through conversation, the cynic will hopefully come to understand that scientists are humans with emotions and subject to emotional reaction. The pragmatist will see that the mathematical equation is not so easily weighed but will learn from conversation that cost versus benefit is highly complex. The purist will come to understand that while high quality science is

in fact essential, defining what constitutes high quality is difficult and will require continued evaluation through debate and conversation.

The actual conversations do not need to be elaborate or formal. They will take place naturally and develop organically. People will congregate and talk at school or on the bus. The issues discussed will be the topic of conversations at scientific meetings and committee hearings as well as at conferences and in classrooms. Conversations will take place in the elevator and in lecture halls. The quiet will listen patiently while the talkative ramble on. The erudite will relish the opportunity to debate and all interested parties will finish with a slightly different perspective than they started. What is important for the purpose is that no one shrink from the conversation. The topic can be difficult and emotional at times. Many will not have thought about the topic and others will be excessively enthusiastic. But all must consciously engage and participate. There is no excuse for not participating. Every member of society has a responsibility to converse. This is because all of society will derive benefit from the good usage of animals in research and teaching. For the same reasons, all will be impacted if society withdraws its acceptance of animal use or if that animal use is poor.

Acceptance of animal use in research and teaching is based on the decisions and opinions of the individual. Many and varied factors influence those decisions and opinions. The breadth and depth of experience and knowledge which underpins the perspectives of individuals is vast and only continues to grow, expanded by continued scientific research and investigation. There is no single act or policy that can guarantee that society will continue to accept the use of animals. There are in place many sound principles as well as irrational dogmatic beliefs. It is an overwhelming task to try and resolve the varied experiences and opinions of a society composed of such varied individuals. Free societies do not dictate morals but rather allow free and open debate to determine ethics. The mechanism of this debate is the simple conversation. By conversation, progress will continue and the opinion of society will adapt to meet the needs of that society. The place of scientific research and the use of animals in science will continue to develop organically with that society as it progresses. The simple conversation will serve to bind science within society and determine the future of animal use in research and teaching.

2014 ANZCCART AEC Member of the Year Winners Announced

For the first time since the inception of the ANZCCART AEC Member of the Year Award, the judges were not able to split two exceptional nominees, so the decision was made to make two separate awards this year. Both AEC members were recognised for their outstanding contributions to one or more AEC over many years and were rewarded with an all-expense paid trip to Queenstown in New Zealand so they could attend the 2014 ANZCCART conference.

The 2014 ANZCCART AEC Members of the Year are:

Winner: - Ann Rhodes (Canberra)



Ms Ann Rhodes from Canberra receives her Award from ANZCCART CEO Dr Geoff Dandie at the conference

During Ann's 32 year service as a Category C member on the ANU Animal Ethics Committee, they estimate that she would have assessed over 4,000 new applications and over 6,000 amendments. When you then allow for her additional decade of service to the CSIRO AEC in Canberra, her 15 years as a Category C member of the Canberra Institute of Technology AEC and her three year term on the Schools' AEC as well as her six year membership of the National Animal Welfare Advisory Committee, all in a voluntary capacity, it is clear why the judging

panel considered Ann to be in the 'must win' category.

In her role as a Category C member of these AECs, Ann has also been a strong advocate for ensuring that all staff and students working with animals must receive adequate training. She has also been a strident supporter of the mandatory provision of appropriate environmental enrichment for all captive research animals and in keeping with her support for the principles of the 3Rs, she has also worked hard to ensure that the wellbeing of research animals is maintained by the appropriate use of analgesics as well as more frequent and thorough monitoring – all ideals that are closely aligned with the goals of ANZCCART as well.

Winner: - Dave Marshall (Christchurch)



Dave Marshall who serves as the external Chair for the University of Otago AEC in Christchurch receiving his award

Dave was nominated for this award by the University of Otago's Christchurch AEC, which is a committee Dave has served since the mid 1980's when he joined as the NZ Veterinary Association representative (equivalent to Category A membership). He has continued to serve in that role since that time and during the past 12 years, Dave has also served as the Chair of that AEC. In this role, Dave has been able to provide support and guidance to all members of the AEC and serve as an excellent link between the committee and researchers.

During the years that followed the devastating earthquakes that hit Christchurch, the AEC has obviously faced a number of fairly unique and extremely challenging issues and Dave's good humour, skills and

excellent leadership proved to be invaluable so we were delighted to be able to recognise so many years of excellence in voluntary service with this award.

Recent Articles of Interest

Supercooled livers last for days

Researchers in Boston Massachusetts have developed a solution that protects rat livers from freezing and could therefore potentially extend transplant window for human organs.

When a human donor organ becomes available, transplant surgeons have only about 12 hours to collect and transplant the tissue before it breaks down. But a slow-cooling method that first chills rat livers and then drops the temperature to below freezing - allowing them to be stored in a 'supercooled' but non-frozen state - keeps them fresh for three days. If the method works for human organs, it could drastically increase the numbers that are available for transplantation.

First, the team flooded rat livers with oxygen and a combination of chilled chemicals, including a glucose-like compound called 3-O-methyl-D-glucose that protects the cells against freezing. This slowly cooled the livers to 4°C, and the researchers then stored and preserved them at -6°C without freezing them.

Three days later, the team reversed the process by gradually bringing the stored livers back up to body temperature and transplanted them into rats. All rats that received transplants of super-cooled livers survived for at least three months, whereas rats that received three-day-old livers preserved using current approaches all died. The research is published online in *Nature Medicine*.

<http://www.nature.com/news/supercooled-livers-last-for-days-1.15465>

Animal research: mice win reprieve as genetic model for man

The extensive use of mice for medical research and drug development has been central to a number of advances and a key part of research for decades with more than three million procedures a year involving the use of mice in the UK alone relying on the validity of the mouse model. However, a US study last year raised doubts about the murine model in severe inflammatory

conditions such as sepsis, acute infection and severe burns. The scientists found that a completely different set of genes was active in people and mice with these conditions. However, Japanese researchers have now re-analyzed the data using what they consider to be "more appropriate and more sensitive methods for detecting similarities of gene expression than that applied in the original paper". Both the US and Japanese analyses have been in Proceedings of the National Academy of Sciences.

The original paper looked at all genes whose activity changed during inflammatory disease in either humans or mice. However, as part of the re-evaluation of the data, scientists from Japan's National Institute for Physiological Sciences focused on genes that were significantly altered in both species and came to the opposite conclusion from the US researchers. The Japanese authors also say their analysis is more representative of mouse data produced under similar conditions to human studies. They found that between 77 and 93 per cent of the genes changed in the same direction in the human disease and mouse model.

"These findings were taken to indicate that gene expression patterns in mouse models closely mimic those in human inflammatory conditions and strongly argue for the use of mice as animal models of human disorders," but the debate is far from over.

<http://www.ft.com/cms/s/2/1665e372-2276-11e4-9d4a-00144feabdc0.html#ixzz3Anaexoxy>

Mapping bats could help stop Ebola's spread

Fruit bats are believed to be the natural hosts of Ebola and mapping their habitats could be one important step in stopping the spread of the deadly disease says Skog, a geoinformatics researcher at Sweden's Royal Institute of Technology.

Historical data of geography and disease distribution in major epidemics of the past has provided a basis for predicting the course of future epidemics and also the state and how extensive a current epidemic will spread.

The bats are hunted as "bush meat" by residents of rural West Africa and their consumption as well as bats' droppings have helped spread the virus. Assuming that fruit bats are the reservoir for the ebola virus, Skog says, data of locations of bodies, possible infections and diagnosed cases could be collected and compared and analysed together with environmental and climatologic data.

Using this data, the parameters for habitats of fruit bats can be defined, and these risk areas could be mapped and monitored so that preventative measures to control the spread could be performed by health authorities.

<http://www.sciencedaily.com/releases/2014/09/140910083521.htm>

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