

Inside this issue:

<i>Disaster Management in Animal Facilities</i>	1
<i>2012 ANZCCART Conference</i>	5
<i>Honorary Life Membership of ANZCCART</i>	6
<i>ANZCCART AEC Member of the Year Award</i>	6
<i>ANZCCART NZ Animal Care Technicians' Individual Project Award</i>	7
<i>Recent Articles of Interest</i>	8

Disaster Management in Animal Facilities

Geoff Dandie, CEO, ANZCCART

During the past few years, the Australasian region has seen catastrophic bushfires, floods, cyclones and earthquakes wreak havoc in cities and rural communities alike. Some disasters have affected research farms, some have destroyed institutional buildings and some have decimated regions where wildlife studies have been conducted for decades, while others have affected the people who work in research in a far more personal way. They have all served to remind us of the importance we need to place on planning to ensure the safety of both the animals and all staff, including those who care for animals used within the research and teaching sector.

It is a legal requirement for all workplaces in Australia and New Zealand (as well as most other parts of the developed world) to have a disaster management plan in place and it is fair to suggest that the recent run of disasters has tested many of these in a way that has helped to highlight both the strengths and the limitations of some. It is also only fair to acknowledge that the magnitude and frequency of some events (particularly the earthquakes that have plagued the Christchurch region of New Zealand) would have far exceeded anything that

may have reasonably been foreseen when such plans were made. It must therefore be stated from the outset, that this article is NOT designed to highlight any real or perceived deficiencies in any institutional disaster plan(s) and we are certainly not being critical of any institutional responses to the various disasters that have occurred. In fact, it would seem that most if not all disaster plans have stood up rather well. The only aim of this article is to draw on and share some of the experiences that have come from recent events with a view to helping others check and potentially update their own plans before they are tested.

Some disasters like cyclones and floods can be considerate enough to allow time for preparations to be made, while others such as flash floods, bushfires and particularly earthquakes can occur with very little warning or none at all. Accordingly, the ability of institutions and animal care staff to prepare and make appropriate arrangements for additional resources such as food, water, bedding, etc, or even emergency accommodation for animals may be an essential component of disaster plans or it may be completely irrelevant. Equally, the options for animal house or

institution management to adapt staffing rosters to fit in with everyone's work and personal circumstances is going to be impossible to predict in advance because disasters of such magnitude will inevitably also affect staff at home as well as their family and friends with at least equal severity. So communication between staff, between staff and their families, between institutional management and animal care staff, etc will all be critical from the moment disaster strikes, right through until the situation has been resolved.

Of course, the need to maintain communication channels will affect everybody within the affected area and inevitably, damage to infrastructure, loss of power, etc will mean this is going to be a challenge for the entire population. Recent experience has shown that mobile phone coverage is usually the first to recover and also the most heavily used. This means that telephone calls might be possible, but overloading of circuits does mean that connections can be difficult. The use of SMS messaging has proven to be far more reliable in a number of situations and a better option during the early stages of recovery. Even though the delivery of messages can be delayed by the volume of mobile phone traffic, they do seem to go through and because their delivery is automatically controlled, the need to "keep trying to get through" is eliminated – thereby reducing the unnecessary stresses on the system which can be caused by this practice.

One under-rated, but incredibly important aspect of communication during the early stages of recovery is going to be between animal facility staff and senior management of the institution. This is essential if provisions are going to be made for staff access to potentially secured and / or damaged buildings. It will also be essential to ensure that appropriate measures can be taken to secure, maintain, treat, potentially transport or possibly even euthanase animals within the institution's facilities. As a general rule, institutions will often want to secure their buildings to both protect their contents and also limit the risks to their staff and others who may be inclined to enter buildings that may have been damaged or otherwise compromised. Equally, it is often the initial response of animal care staff to try and enter their facilities so they can check on their animals. While both approaches are understandable and commendable, it is essential that staff at all levels communicate to determine what can be done and how to best achieve a safe and effective solution. Once this is achieved, it is essential that access to the facilities is gained with the full knowledge of someone in authority who can remain outside the building and raise the alarm if agreed communications or maximum entry time limits are not met. Equally, it is essential to consider the potential risks and ramifications to those who may be called on to mount

a rescue mission if anything goes wrong. This means that there may be a need to assess and communicate the potential risks or possibly even getting some form of structural / electrical safety assessment done before staff can re-enter the facility. While this kind of decision will always be a judgment call, it should also be remembered that entering a damaged building is not a trivial matter, nor is it something that should be done alone. All these factors combined will inevitably mean that animal care staff will need to coordinate and work with security staff at some level as well as the manager responsible for the site.

In cases where the building has been profoundly damaged or other factors mean that the facility will be out of commission for an extended period, the inevitable question about the fate of the animals housed in that facility will need to be addressed. Before staff try to enter any building that has been affected by such an event, they will need to coordinate with their local senior leaders or managers to develop a Site Entry Plan and a safety assessment. The natural response of senior management will always be to hold the safety of their staff as their number one priority. This is both a reasonable and responsible course of action and one which is required by law, so it would not be uncommon to find that the initial response might be to euthanase all animals without considering alternatives, or the value of those animals to researchers and their work or the fact that they may be essentially irreplaceable. The final decision will require collaboration between the researchers, senior management and animal care staff and needs to take into account the welfare of the animals, their value to the researcher and project. It will to some extent be dictated by the nature of the facility and the work being done in it. Where animals are being held in conventional (i.e. no biohazard containment standards) it may be possible to either maintain those animals *in situ* (within the limits of safety etc) or transfer them to another nearby or temporary facility. In cases where animals are being kept under Australian Quarantine and Inspection Service (AQIS) or Office of the Gene Technology Regulator (OGTR) permits, there will be clearly defined requirements for containment of animals that may prohibit or at least seriously restrict the possibility of transferring animals to other facilities, so euthanasia may be the only option. It is also a requirement of both OGTR and AQIS licences that these authorities are notified about any breach in containment and/or potential escape. Whatever the outcome, it is essential that both animal care and research staff be consulted as a part of the decision-making process. There may also be deeper issues of operator welfare and safety that need to be factored into the decision. For example, if the decision has to be made to euthanase all the mice

in a biological containment room, some thought must be given to how and where this will be done. The fact that it will take one or more operators hours or possibly days to euthanase hundreds or potentially thousands of animals under conditions which are no longer optimal must be considered along with the potential risks the staff may face. In an average to large facility holding laboratory animals, the task of killing all the mice in one average sized room may take one member of staff a full day or longer – assuming they still have good access to equipment suitable for large scale euthanasia such as a CO₂ chamber or anaesthetic delivery system. If not, it will take a lot longer and be more stressful for staff that probably have other personal concerns as well.

In cases where the buildings are deemed “safe to enter” but may still be closed due to the effects of fire, flood, cyclone or earthquake it can be common for the power and potentially other services to be shut off. This can mean a loss of air circulation in individually ventilated cages and compromise the health and welfare of the animals. In some instances it may be possible to re-establish power to these systems, but in others it may pose a far greater problem. Power failures are always inconvenient, but in the case of disaster recovery situations, they will commonly mean being without electricity for days or weeks and there will inevitably be competition for access to any emergency power that is available. It is therefore important to negotiate access to emergency power supplies well in advance of any event, so you can have a high priority assigned to essential areas within your facility. Whether we are talking about fish being held in tanks that require oxygenation or rodents being kept in individually ventilated cages, sustained loss of power will compromise the integrity of housing or potentially cause the death of all animals, so a strong case for access to such power will need to be made.

During the time I was preparing this article, I was fortunate enough to speak with a number of people who have had to endure the most challenging conditions you could ever imagine and the message from all of them was the same – preparation is the key. With the benefit of hindsight, these extraordinary people have offered the following advice:

Always carry your mobile phone at work because then if disaster strikes suddenly, this will provide you with the best and possibly only option for contacting colleagues, friends, family or emergency services.

Carry your car keys with you as well. That way you will be in a position to go home, move your car out of the way, or do whatever

you may be required to do without having to put yourself in a dangerous situation before you can do so.

Try to ensure that sufficient stocks of feed and bedding to last for a week are held within the facility. It may also be worth holding a stock of drinking water for the animals as well if possible.

Ensure a torch is available in each area.

Reliance on the mobile phone networks for communication comes with a need to ensure that phone batteries can be recharged, even when the power supply has been interrupted. Solar chargers are one potential solution and can be purchased for around \$100-\$150.

Floods

When the floods hit Brisbane earlier this year, animal facility staff were grateful for the fact that they received 2 days advanced warning so they were able to make preparations. These preparations ranged from the more obvious things like transporting extra feed, bedding material and water into the facility, right through to ensuring that all deliveries were postponed and researchers were informed that normal services would be curtailed or suspended during the flood. Even though the animal facility remained above the water line throughout the disaster, many of the staff were not as fortunate and even those whose homes remained dry found that they were often not able to get through flood waters to work. This left the facilities being maintained by a tiny fraction (4%) of the normal number of staff until the floods had receded and the roads were reopened. Access to buildings was also severely restricted and staff were unable to use normal drains, sewerage system, etc for several days as these were also affected by the floods.

Bushfires

If your facility is located in or near a rural area, bushfires can pose the greatest threat to the safety of staff, animals and facilities. The following section is largely based on advice obtained from various CFS and CFA websites (<http://www.cfs.sa.gov.au> ; <http://www.rfs.nsw.gov.au/> ; <http://www.cfa.vic.gov.au/>) and we would urge you to check your plan against the information provided by your regional fire service. We would also recommend that you get an authorised representative from your local Fire Service to check through and sign off on your plan. They are generally very happy to provide this service and their advice can be invaluable.

Depending on circumstances, advanced warning of the fires can range from minutes to days but on average and based on personal experience, you will commonly have an hour or so to prepare. The first and most important decision you will need to make is whether to stay and fight the fires or evacuate staff and potentially your animals. A number of factors will affect your decision here, but the most important will include the prevailing weather conditions (particularly the wind speed and direction), the local geography and the direction from which the fire(s) are approaching. Remember that fires will generally move up hills a lot faster than they move down hills, so if you find yourself in a situation where the fire front is approaching your position up a hill and with the wind behind it, think very seriously about doing whatever is possible to protect or evacuate your animals. This would mean doing whatever is possible to clear anything flammable from around the area, sealing all buildings against flying embers and at least moving animals away from windows or other sources of radiant heat.

Any decision to stay and defend facilities against a fire would have to be made after consulting and with the knowledge and consent of your local manager or team leader. You should also seek advice from local fire authorities and comply with their instructions if you are considering staying to fight a fire. If your position is defensible and you decide to stay, you will still need to ensure that all flammable material is cleared. Fill everything you can with water and distribute these filled containers inside and outside any buildings or enclosures. Prepare hoses and whatever else you have available before evacuating all non-essential personnel to a safer area (the last thing you want is to have people tripping over each other and putting everyone at risk). It is also worth remembering that there are good reasons why firemen don't rely on garden hoses connected to the mains. They have limited capacity to deliver water, particularly if the pressure drops due to demand during the fire and can even fail all together.

Only people who are adequately prepared and appropriately dressed to protect themselves from radiant heat, smoke, ash, etc should stay to fight the fires. Prepare yourself for both the heat and noise of the fire. Most people consider the heat, but it is the incredible noise of a bushfire that can be most disconcerting.

If it looks like the fire front is going to pass by, take cover inside or in a safe and well prepared place away from radiant heat, but ensure that you take all hoses (including any non-metal tap fittings) inside with you. These will be essential when you come out after the front passes to extinguish spot fires etc. Plastic tap

fittings in particular will not survive if they are left out in the fire.

Once the crisis has passed, the area will need to be monitored for several hours to guard against flare ups and of course, this is when the difficult phase of treating or possibly euthanasing any animals suffering from burns will begin. Start by ensuring that all animals have access to drinking water as they may need to rehydrate.

Cyclones

Surprisingly, the effects of cyclones on animals and animal facilities have been minimal recently and this is most likely a reflection of the excellent preparative work that has been done and the fact that most centres get some warning before a cyclone hits. Of the two cyclones that hit areas with research facilities this year, Queensland undoubtedly fared worse but the preparation work and planning meant that there were only minimal effects on animals and no losses. Even livestock seem able to use the natural contours and geography to shelter from the worst conditions, but the importance of anchoring or clearing objects that may become airborne in the strong winds cannot be overstated.

I was actually in Darwin doing some training for the University when cyclone Carlos hit and it was inspiring to see how calm and well prepared everyone was – right through from preparation to clean up. Clearly, the entire city is well prepared and the University was no exception. There were the usual grumbles about how inconvenient it all was, but the entire city seemed to just go into lock-down mode as the cyclone approached and then leap back into action, with cleanup crews hitting the streets within hours of it passing. The fact that all the buildings in Darwin have been built to withstand cyclones and the locals are experienced clearly helped.

Earthquakes

These are the least predictable and potentially most devastating events that have been faced in recent times. The fact that they can and have struck at any time of the day or night with no warning means that it is both difficult to prepare and impossible to predict the extent of the damage caused. Equally, the uncertainty that follows when buildings may be damaged and unsafe to enter poses a number of challenges. The fact that power, water and sewerage systems may all be unavailable for an extended period will further complicate the situation, particularly if animal holding facilities have been damaged or destroyed.

The effects of a disaster of this kind have been briefly summarized by a dedicated member of the animal care staff in Christchurch who has now endured two devastating earthquakes and thousands of aftershocks during the past year and this can be found on Page 7 in this edition.

If there has been a single lesson learnt from all the disaster events that have struck during the past twelve months, it would have to be that preparation is the key. The fact that all the institutions directly affected have been able to survive these events as well as they have is a testament to the planning they have done and the processes they were able to put in place as quickly and efficiently as they did. So the best advice that we can give is to check your emergency plan and ensure that everyone is aware of it. If you find yourself in a situation where you don't have a plan that can be followed in an emergency, you should develop one now, so decisions can be made calmly in the cold hard light of day and not during an emotional time when people's judgement may be impacted.

2012 ANZCCART Conference

Thinking outside the cage: a different point of view

This conference is for Animal Ethics Committee (AEC) members, ethics administrators, and teachers, researchers, animal technicians and carers who work with animals. The conference will explore a wide range of issues associated with animal welfare in research and teaching. The aim is to explore how we move forward – collectively and wisely – to ensure that the best possible animal welfare is always at the core of our approach to teaching and research.

A stimulating program of speakers, panel discussions, plenary and parallel sessions, and practical workshops, will provide the forum for this conference.

Focal themes will include:

- efforts to minimise or eliminate animals from research and teaching;
- animals in non-traditional areas of research, bioscience and art;
- specific welfare concerns associated with animals in teaching;
- welfare issues in wildlife, and working with diverse species in the field;
- laboratory, farm and domestic animals;
- veterinary training;
- research conducted for the sole benefit of animals

(e.g. studying animal diseases);

- new medical and scientific discoveries;
- the animals' point of view.

We are also planning some pre and post-conference events.

Before the Conference:

We will offer a special morning tea gathering for AEC members and administrators in their category groups (A B C D etc). Morning of 24th July. No additional cost.

Following the Conference:

We are planning to offer specialist workshops on Friday 27th July 2012. Places will be limited and the workshops will involve an additional cost. They will include:

- A full day workshop on animal euthanasia (aimed at AEC members as well as those who work with animals).
- A half-day workshop on surgical and suturing techniques.

Register your interest early to avoid disappointment.

Conference Dates:

Tuesday 24th to Thursday 26th July 2012

Conference Venue:

[Rendezvous Observation City Hotel Perth](#) With the beach literally at your doorstep (direct access from the hotel), and with spectacular views of the sea, the venue is around 15 minutes (12 kms) drive from the city centre and 30 minutes (25 kms) from the airport.

Conference Registration:

Registration costs have not yet been finalised. Conference Registration (including all conference sessions, a welcome cocktail function and the conference dinner) is anticipated to be in the range of \$500-\$600.

Papers & Workshops:

Offers of Papers, workshops and posters are now open. If you are considering presenting a paper or workshop for the conference or offering a poster, we invite you to submit an expression of interest:

- Provide a title, and an abstract of no more than 250 words.
- Provide your name, institution, and full contact details.
- Presenters of papers and workshops will be allocated 10, 20 or 30 minute time slots – please indicate your preference as part of your submission.
- All submissions should be made to Kim Gifkins at research.ethics@ecu.edu.au
- Closing date for submissions is Monday 2nd April, 2012.

- Successful submissions will be notified by Monday 30th April, 2012.

Additional points to note:

- All submissions will be peer-reviewed. This process will be managed by the conference organising committee.
- Alongside the general invitation, we are seeing to attract papers on topics such as: animals in teaching; animal emotions and behaviours; philosophy and animals; vaccine trials; reduction or elimination of animals; and the functioning of an AEC.
- There will be a series of short (10 minute) papers on the ethical issues which arise when euthanasing a particular species (e.g. laboratory animals, farm animals, companion animals, wildlife etc) or on the ethics of individual euthanasia techniques; followed by a panel discussion. Posters are also welcomed on this theme.
- At least one author of an accepted abstract must attend and present at the Conference. Unfortunately, the conference will not be able to contribute to the attendance or registration costs of presenters.
- All accepted abstracts will be published in the Conference Booklet, and the paper prepared by authors will be published in the book of proceedings.

We are looking forward to hosting ANZCCART and welcoming you to Perth in 2012.

Organising Committee:

Erich von Dietze
Julie Bellamy
Kim Gifkins
Deirdre Bourke
Joanne Davis

Honorary Life Membership of ANZCCART

Regular readers of ANZCCART News will be aware of the fact that ANZCCART has created a category of membership (Honorary Life Member) specifically to recognize the extraordinary service given to ANZCCART over a number of years by some of the most exceptional people who are part of the ANZCCART family. When we created this award, it was with the clear intention that it must be seen as the ultimate accolade for services to ANZCCART and should also take into account any other relevant activities that may have been undertaken by the recipient in the area of animal welfare – particularly

in areas that are in line with the goals and aspirations of ANZCCART.

To date, we have honoured Professor Margaret Rose and Professor Warwick Anderson in 2010 and then Mrs Elizabeth Grant, Professor David Mellor and Dr A. C. David Bayvel in 2011.

In order to ensure that the process for nominating people who have provided extraordinary service to ANZCCART and to the wider goals of ANZCCART remains open and accountable, we would like to ensure that everyone is aware that they can send a nomination to the Board at any time via the CEO of ANZCCART. This is best done by email, sending it to ANZCCART@adelaide.edu.au and it will be considered in the next round. As the process of awarding Honorary Life Membership includes the endorsement of the Annual General Meeting as the final step, we need to formally close nominations on the 31st of January each year.

ANZCCART AEC Member of the Year Award

We are all indebted to the members of our animal ethics committees who are the lifeblood of our AEC system. Without the devotion and hard work of all these people (and particularly the external members who volunteer their time), the combined interests of the community, teachers & researchers and all the animals that are used in research and teaching would not be served or protected. We are extremely fortunate in this part of the world to be able to have confidence in a system that is open and publicly accountable to ensure that animals used in research and teaching are cared for at all stages and appropriately monitored. This is why ANZCCART set up an award specifically to recognise the efforts of AEC members and created the ANZCCART AEC Member of the Year award. Now in its fourth year, this award has been an outstanding success and we have been both delighted and amazed by many of the nominations we have received over the years.

ANZCCART would now like to call for nominations for the 2012 AEC Member of the Year award and would welcome nominations for outstanding AEC members who are currently serving one or more AECs in Australia or New Zealand.

Nominations should be sent via email to ANZCCART and include details of the nominee, which AEC(s) they belong to, reasons why they should be considered for this award, and what makes them stand out above all the other excellent AEC members that work so hard.

Nominations should preferably not exceed one A4 page in length and should be received by the CEO of ANZCCART by the closing date (Friday 1st of June, 2012). Please be aware that we have adopted a policy of considering that all nominations remain current for three years from the date of receipt. This is simply because we only make one award each year even though we receive many more nominations for AEC members who would clearly be worthy of such recognition.

Part of the prize awarded each year is an all-expenses paid trip to the Annual ANZCCART conference for the winner. Please refer to the ANZCCART web site for full terms and conditions of the award:

<http://www.adelaide.edu.au/ANZCCART/awards/>

ANZCCART New Zealand Animal Care Technicians' Individual Project Award 2011

Making a difference to welfare of animals during natural disasters: The 2010/2011 Christchurch Earthquakes

Brief Review by winner Arron Dyer, Christchurch School of Medicine, University of Otago, New Zealand

Christchurch, New Zealand, has suffered two major earthquakes in the past year, occurring on 4 September 2010 and 22 February 2011. On entering the Animal Research Facility of the University of Otago, Christchurch following the first quake (which occurred in the early hours of Saturday morning) it was clear that, while we had suffered damage, it was not too severe. Power was on and water also, although people were being advised to boil the water before drinking. Aftershocks were still occurring and power would temporarily cut out, so a torch was obtained. We had rodents (mice and rats) plus rabbits in the facility at this time. Following an initial cursory check of each room to assess conditions and check for any immediate danger, I performed a thorough check of each room. I found that cage racks had moved around in the rooms, but no cages had come off the shelves. However, some lids were displaced and some animals were loose - these were captured, and after checking tags, were returned to the correct cages and lids replaced. Racks were pushed back into place,

water bottles were all checked to see no lids were loose and spilling water, food was topped up, and ventilation filters replaced. I rechecked that everything was secure and left as there were continuing aftershocks and the building had not yet been cleared as being safe. In the succeeding days I continued to enter the facility in liaison with the building manager and security personnel to check on the animals - topping up food/water as required and other animal husbandry as needed.

The more devastating February earthquake occurred in the early afternoon. Following this quake our animal facility suffered major damage, with many large cracks and some holes occurring in the internal walls, and power was lost. After the initial quake was over, the facility was cleared for staff safety. Once it was deemed safe enough to re-enter, I proceeded to check all the animal rooms. Racks had moved across rooms and many cages had lost their lids, with multiple rodents loose in each room. Water bottles had lost tops spilling their contents into cages and soaking bedding and animals, and food was spilled over the floor. I put the racks back into place, re-homed rodents into their correct cages, replaced cages that had been soaked, and refilled water bottles and replaced food. I checked on the rabbits who seemed unfazed by what was happening, all safe in their cages, and on the sheep we had in the facility which were also okay, and after giving them food and water, I then left to make my way home.

In the following days I carried on with basic animal husbandry and kept the researchers informed about the condition of their animals, any requirements they may have had, euthanasia of any animals and removal of animals not deemed necessary in the facility. I also liaised with the building manager, security, head of the Animal Users Group, builders, maintenance staff, facility staff, and CDHB engineers, and arranged food from Dunedin and rubbish removal.

Some key points to consider for disaster response:

- Stored water, 1 week's supply;
- Strategically placed torches;
- External facility where can sterilise food;
- Clearly defined lines of communication;
- Liaison between facility staff and researchers.

Recent Articles of Interest

http://www.nature.com/news/2011/111005/full/news.2011.576.html?WT.ec_id=NEWS-20111011

The world of bionics and the Six Million Dollar Man may be a step closer with the development of brain implants that allow macaques to “feel” a virtual object with a virtual arm. This is a significant step towards the development of prosthetic limbs or robotic suits that might improve the mobility of disabled people.

http://www.nature.com/nature/journal/v478/n7370/full/478427b.html?WT.ec_id=NATURE-20111027

This article highlights the difficulties being experienced in some countries when it comes to getting animal welfarists and researchers whose work involves animals together to discuss their differences. It might be suggested that this highlights the advantages we enjoy in this part of the world that come from operating within an open and publicly accountable system of regulation and also to importance of the role played by organizations like ANZCCART.

http://www.nature.com/news/india-to-cut-out-animal-dissection-1.9680?WT.ec_id=NEWS-20111220

It has been reported in the 20th December issue of the journal Nature that the University Grants Commission (UGC), the national body in New Delhi that funds and governs Indian universities, has announced new rules that would see almost all animal dissection being phased out and replaced computer simulations and models.

http://www.nature.com/news/us-chimpanzee-research-to-be-curtailed-1.9663?WT.ec_id=NEWS-20111220

The US Institute of Medicine (IOM) has released a report questioning the use of chimpanzees in many currently approved projects and recommended curtailing government-funded research on chimpanzees. The National Institutes of Health (NIH), which funds research on chimpanzees then announced it would suspend awarding new grants and review currently funded work that involved the use of chimpanzees.

ANZCCART NEWS ©

is free of charge and is published by the
Australian and New Zealand Council for the
Care of Animals in Research
and Teaching Limited.

It is a publication for researchers and teachers; members of Animal Ethics Committees; staff of organisations concerned with research, teaching and funding; and parliamentarians and members of the public with interests in the conduct of animal-based research and teaching and the welfare of animals used.

The opinions expressed in *ANZCCART NEWS* are not necessarily those held by ANZCCART Ltd.

Contributions to *ANZCCART NEWS* are welcome and should be sent to:

ANZCCART

C/- The University of Adelaide
South Australia 5005
Australia

Tel. 61-8-8303 7585 Fax. 61-8-8303 7587

E-mail: [anzccart@adelaide.edu.au/](mailto:anzccart@adelaide.edu.au)

<http://www.adelaide.edu.au/ANZCCART/>

or

ANZCCART New Zealand

PO Box 598
Wellington

New Zealand

Tel. 64-4-472 7421 Fax. 64-4-473 1841

E-mail: anzccart@royalsociety.org.nz/

ISSN 1039-9089