



RSPCA AUSTRALIA

Animal welfare science update

November 2003 Issue number 7

This is the seventh Animal welfare science update provided by the RSPCA Australia office. The aim of the update is to keep you informed of developments in animal welfare science that relate to the work of the RSPCA. The update provides summaries of some of the most relevant scientific papers and a detailed bibliography of other articles that have been received by the RSPCA Australia office in the past few months.

Companion Animals

1. Canine Adoption

Many Australian households have at least one pet, but animal shelters are still inundated with unwanted animals, particularly cats and dogs. This detailed review on canine adoption addresses reasons why people want a dog; why they give up a dog, and factors affecting successful adoption. Most people today want a dog for companionship, but other motives include health or therapeutic reasons, security and teaching children responsibility. Most dogs are relinquished because of behavioural problems, or because the owner changes their lifestyle or they find the dog unsuitable for their lifestyle. Factors affecting successful adoption include how the dog behaves in the shelter and how the dog reacts to potential adopters.

The review concludes that there are many issues involving pet relinquishment and improvements may be achieved with better shelter facilities, thorough training of the animal and addressing the expectations of the owner before adoption.

Marston, LC; Bennett, PC. (2003) Reforging the bond – towards successful canine adoption. *Applied Animal Behaviour Science*. 83:227-245

2. Dog Ownership in Australia

Do conditions in homes and backyards influence dogs' welfare or affect aggressive or behavioural problems? This study examines the relationship between behavioural problems and physical and social conditions of dogs kept in suburban Melbourne, in an attempt to discern whether there are any obvious links between the dogs' environment and their behaviour.

203 dog owners responded to the survey, which covered the behaviour of 254 dogs. Questions were asked about the demographics of the households and their dogs, reasons for having a dog and the location of the dogs during the day and night. A variety of behaviors were listed and the owner was asked to rate the behaviour of their dogs using these parameters.

The survey found that the most prevalent problems encountered were overexcitement, jumping and barking. These behaviours usually correlated with how well the dog was trained, how much human contact the dog has and the experience of the owner. The authors stress that while there was a correlation, further study is required to discern whether these factors were the cause of the behavioural problems. Studies such as this reinforce the responsibilities of dog owners and possible solutions which may reduce, eliminate or prevent problems which could lead to abandoning or rehoming dogs.

Kobelt, AJ; Hemsworth, PH; Barnett, JL; Coleman, GJ. (2003) A survey of dog ownership in suburban Australia – conditions and behaviour problems. *Applied Animal Behaviour Science*. 82:137-148

Farm Animals

3. Beliefs, attitudes and behaviour of abattoir personnel

Research has shown that the handling and treatment of pigs immediately prior to slaughter has an effect on both the welfare of the animal and the meat quality of the carcass. This study looks at the attitudes and beliefs of stockpersons towards pigs and how this relates to their behaviour whilst handling the pigs in the abattoir.

Twenty-three people participated in the study. Self-answered questionnaires were developed to determine employees' experience, personality and general attitude regarding pigs. Following this, the behaviour of the workers was discretely assessed by trained observers, focusing on their use of the electric prod whilst herding the pigs into a CO₂ stunner.

The key finding of this study was that an overall positive attitude to pigs correlated with using the prodder without an electric shock, whereas people who generally did not understand or like pigs often shocked the pigs into movement. Electric shocks induce increased fear and distress in the pigs, to the detriment of welfare and meat quality. This infers that stockpersons with a positive approach and adequate training in to the behaviour and handling of their charges is advantageous for both the pigs and the consumers.

Coleman, GJ; McGregor, M; Hemsworth, PH; Boyce, J; Dowling, S. (2003) The relationship between beliefs, attitudes and observed behaviours of abattoir personnel in the pig industry. *Applied Animal Behaviour Science*. 82:189-200

4. Broiler chicken range

By definition, "free range" chickens have to have access to an outside area, but this does not necessarily mean that they actually venture out. Often the outside environment provided does not induce the animals and they still spend their entire lives in the barn. This paper investigates what influences broiler chickens' behavioural choices and what environment may be best for free range farms.

Seven English farms were chosen, each complying with the RSPCA UK Freedom Foods standards. Each farm had a similar set-up and management procedures, but had different outside environments and vegetation coverage. Regular observations throughout three seasons were collected and the percentage of chickens outside at particular times calculated. The study found that the amount of foliage greatly influenced chicken range, with dense tree coverage being the most desirable, and the birds tended to stay inside or close to the barn if not given natural protection. The chickens tended to avoid direct sunlight and were more likely to be found outside at the beginning and end of the day and in summer rather than winter and spring. This result is not surprising, considering chickens are descendents of jungle fowl whose natural habitat is the heavily foliated bamboo forests of South-East Asia. These results provide some points to consider when designing and developing free range farms.

Dawkins, MS; Cook, PA; Whittingham, MJ; Mansell, KA; Harper, AE. (2003) What makes free-range broiler chickens range? In situ measurements of habitat preference. *Animal Behaviour*. 66: 151-160

Animals used for sport and entertainment

5. Tiger Transport

Circus life involves a lot of travel and as a result circus animals are often confined to small cages and exposed to the stresses associated with loading/unloading and transport. Little research has been conducted examining circus animals during transport. This short paper documents a study of behaviour and physiology of tigers during long distance trips. The movements and behaviour of six animals from two American circuses – Ringling Bros., Barnum & Bailey and Vasquez Bros. Circus – were remotely recorded during a

routine tour and their temperatures recorded during the trip. Each trip lasted an average of four hours and the behaviour of each tiger was recorded and categorised. The activities of each animal immediately before transport was noted and it emerged that those animals that performed or exercised prior to transport were less active and paced less during the journey. The body temperature of these animals was slightly elevated also, again probably due to their previous activities. This paper has no obvious conclusions relating to the welfare of the tigers or whether the results indicate tigers are better off travelling soon after exercising. Even though the results are inconclusive, it does give a start to addressing the lack of research and some of the problems associated with exotic animals and circuses.

Nevill, CH; Friend, TH. (2003) The behaviour of circus tigers during transport. *Applied Animal Behaviour Science*. 82:329-337

6. Carnivore home range

There are some animals, such as the American mink, which thrive in captivity, but others like polar bears often develop stereotypic behaviours and breeding difficulties if kept confined. This brief communication reports the discovery of a correlation between the wild home range of various carnivores and how well they fare in captivity. Thirty-five species of carnivore were studied and data collected relating to their natural home range, daily travel distance, and approximated time spent foraging, hunting and resting. The amount of time spent in abnormal stereotypic pacing and other activities such as walking, playing etc was collected as well as the infant mortality rate in captivity. The researchers found a strong correlation between the size of the natural home range and the incidence of stereotypic behaviour and infant mortality.

This result has great influence on zoos and wildlife centres and indicates that the lifestyle of wild animals should be considered before selecting animals for captivity. The authors conclude that there should be a push towards choosing animals with small home ranges which cope better with captivity and improving the husbandry and conditions of larger range animals, or eliminating them from captivity all together.

Clubb, R; Mason, G. (2003) Captivity effects on wide-ranging carnivores. *Nature*. 425:473

Animal research and experimentation

7. Evaluation and treatment of pain in rats and mice

Researchers and animal technicians should be just as concerned about the welfare of their animals as they are about the results of their experiments. One of the largest problems with assessing the welfare of research animals is the difficulty to accurately assess pain and distress in non-human animals. This paper discusses some of the concerns and issues dealt with by American Institutional Animal Care and Use Committees (IACUCs). The role of IACUCs is to assess research proposals and techniques in individual institutions in order that they conform to the Animal Welfare Act and one of their major problems is how scientists evaluate and treat pain in laboratory animals. Pain is often expressed by changes in behaviour and physiology, but many animals, especially rodents, have a high pain threshold and do not express pain in measurable ways or may not perceive pain in the same manner as we do. The detection and evaluation of pain in laboratory animals is also very subjective and is based strongly on the empathy of the assessor. The treatment of pain is also a concern, as animals react differently to pain relieving drugs and side effects may influence experimental results. This report suggests that people involved with laboratory animal welfare need to be critical in their approach to evaluating the intensity of pain and the effectiveness of analgesics and that this can only come about by thorough education and training.

Gross, DR; Tranquilli, WJ; Greene, SA; Grimm, KA. (2003) Critical anthropomorphic evaluation and treatment of postoperative pain in rats and mice. *Journal of the American Veterinary Medical Association*. 222(11):1505-1510

8. Compassion for lab animals

Traditionally, scientists have been expected to treat laboratory animals objectively and as a “tool” to obtain data. If the researcher gets too emotionally involved with an animal it was considered that their results might be jeopardized and “unobjective”. This discussion paper puts forward some advantages of researchers and technicians creating an emotional attachment to their animals. Animals are sentient beings, able to experience fear and distress and this can greatly affect experimental results. The author suggests that if humans develop a bond with their animals, the health and care of each individual animal is maximized and the final research results are more accurate. With regular interactions with humans, if an animal is used in experiments it is less likely to exhibit unusual behavioural and physiological responses which may influence or obscure the true result. The paper concludes that animal experimenters need knowledge and skill, but also compassion and sensitivity towards their charges in order to get the most accurate results.

Reinhardt, V (2003) Compassion for animals in the laboratory: impairment or refinement or research methodology? *Journal of Applied Animal Welfare Science*. 6(2):123-130

Animal welfare and the environment

9. Magpie Management

Magpies have a reputation for being very territorial and sometimes aggressive towards humans. In some cases the level of aggression requires a bird to be removed from its territory, but public opposition to killing magpies has led to the examination of translocation as a solution to dangerous birds, rather than euthanasia. Whilst there has been much study on the effect of translocation of native animals, the fate of “nuisance” species is not well documented.

In the 1999 and 2000 magpie breeding season, a team from the Queensland Government and Griffith University collected information about magpie attacks in the Brisbane/Ipswich and Gold Coast area. The team acted on the reports based on location of attack, extent of injuries sustained, frequency of attacks and the risk to residents. Birds deemed to be dangerous were caught in wire traps, weighed and banded, and released to various rural locations, away from human interference, between 40 and 150km away from their nest site. The areas where birds were caught and released were monitored where possible and any resightings of birds recorded.

Over the two breeding seasons, 1139 aggressive birds were reported to the government authorities. Most incidents were between mid August and the end of September, the fledgling time for the majority of magpies. Of these birds 141 magpies were caught and relocated, but of these only 22 were resighted. Sightings were reported to the researchers from members of the public through leg band identification. Five of these birds had returned to their nest and three of these were once again reported as being aggressive. Five birds were sighted in a stable pair, four were found dead and ten had been accepted into a new flock. There was no correlation between the time, distance and return frequency in this study, but previous studies indicate that magpies have a territory of approximately 25km, therefore the further away the bird is released, the less chance there is of the bird returning to its nest.

The birds were released away from human settlement, reducing the likelihood of being resighted. The authors suggest that translocation may be a viable method of dealing with aggressive magpies, but as the fate of most of the relocated birds was unknown it is difficult to be conclusive about the welfare implications of this technique. More research is needed to determine how relocated birds integrate to their new territory and the effect this may have on the ecology and long-term individual welfare.

Jones, DN; Neelson, T. (2003) Management of aggressive Australian magpies by translocation. *Wildlife Research*. 30: 167-177.

10. Fox baiting and quolls

The RSPCA has specific concerns over the humaneness of the poison 1080 as a method for vertebrate pest control, but another area of concern regarding the use of 1080 is the risk of poisoning non-target animals. The spotted-tailed quoll is thought to be particularly at risk during fox-baiting campaigns because quolls are susceptible to poisoning in laboratory tests, but there has been little study focusing on bait uptake or poisoning of quolls in the wild. This study aimed to determine whether poisoned fox baits had an effect on the mortality of spotted-tailed quolls living in the New England Tablelands near Armidale, NSW. A total of 57 quolls were trapped and radio-collared during four seasons at two different locations from 2000 to 2002. Before the trial, movement of the quolls was tracked to decide where best to place the baits. Foxoff™ baits containing 1080 poison and fluorescent rhodamine B dye were strategically placed around the quolls' home ground. Some baits containing only the dye (no poison) were also used to test if 1080 affects bait palatability. Baiting continued for 10 days, after which the remaining baits were collected and the quolls recaptured.

It was found that although quolls often picked up the baits they very rarely ate them. Of all the living quolls recaptured there was no trace of Rhodamine B dye in their bodies. Only one deceased quoll was found with traces of Rhodamine B which showed that the animal had consumed the bait about two weeks before dying. No traces of 1080 were found in the body, but the cause of death was inconclusive. Most animals found dead had died from predation, starvation or injury. Although this is only a small-scale experiment, it indicates that Foxoff™ baits may not be such a problem for spotted-tailed quolls during fox control campaigns as previous thought.

Kortner, G; Gresser, S; Harden, B. (2003) Does fox baiting threaten the spotted-tailed quoll, *Dasyurus maculates*? Wildlife Research. 30:111-118

Transportation of animals

11. Cattle transport from Australia

Live cattle are transported by ship from Australia to South East Asia and the Middle East. Recently two major disasters prompted an examination of the welfare problems associated with this trade and an investigation into the causes of death on cattle ships was undertaken. The major source of information for this investigation was the examination of ships' Masters' reports from the years 1995 to 2000 and veterinary necropsies reports from deceased cattle from four voyages where a research veterinarian was present.

Apart from the two disasters, where ventilation failure lead to death rates up to 75% in one voyage and 42% in the other, the overall death rate for the 5 years was between 0.1% and 0.3%, with an increase proportional to time travelled. The highest death rate was from southern ports such as Portland, Victoria, and those voyages departing in winter. The veterinary reports indicated that heat stress was the highest cause of death, followed by trauma and respiratory disease. It was also found that particular breeds of cattle, eg Braham, naturally cope better during transport than others such as Herefords.

This report states that cattle have a low risk of death during sea voyages from Australia, but suggests that risk of death during live export of cattle can be reduced by improved ventilation in ships, reduced stocking densities, careful selection of cattle breed exported and departure from northern ports.

Although this paper reports a low overall death rate, it should be noted there have been a number of voyages with very high mortality rates. The welfare of the cattle during any long distance sea journey is of great concern to RSPCA Australia.

Norris, RT; Richards BR; Creeper, JH; Jubb, TF; Madin, B; Kerr, JW. (2003) Cattle deaths during sea transport from Australia. Australian Veterinary Journal. 81(3):156-161.

Other papers received by RSPCA Australia this quarter

- Albentosa, MJ; Glen, E; Leeb, C; Whittaker, X; Nicol, CJ. (2003) An evaluation of response to novelty as a predictor of pecking tendency in laying hens. *Applied animals behaviour research*. 82:313-328
- Bachmann, I; Bernasconi, P; Herrmann, R; Weishaupt, MA; Stauffacher, M (2003) Behavioural and physiological responses to an acute stressor in crib-biting and control horses. *Applied animal behaviour science*. 82:297-311
- Bloomsmith, AM; Tarou, LR; Lambeth, SP; Haberstroh, MD/ (2003) Maternal responses to mother-offspring separation in the chimpanzee. *Animal Welfare*. 12(3):359-369
- Christensen, JW; Nielsen, BL; Young, JF; Noddegaard, F. (2003) Effects of calcium deficiency in broilers on the use of outdoor areas, foraging activity and production parameters. *Applied animals behaviour science*. 82:229-240
- Dique, DS; Thompson, J; Preece, HJ; Penfold, GC; de Villiers, DL; Leslie, RS. (2003) Koala mortality on roads in south-east Queensland: the koala speed-zone trial. *Wildlife Research*. 30:419-426
- Erhard, HW. (2003) Assessing the relative aversiveness of two stimuli: single sheep in the arena test. *Animal Welfare*. 12(3):349-359
- Flower, FC; Weary, DM. (2003) The effects of early separation on the dairy cow and calf. *Animal Welfare*. 12(3): 339-349
- Glen, AS; Dickman, CR. (2003) Effects of bait-station design on the uptake of baits by non-target animals during control programs for foxes and wild dogs. *Wildlife Research*. 30:147-149
- Hay, M; Vulin, A; Genin, S; Sales, P; Prunier, A. (2003) Assessment of pain induced by castration in piglets: behavioural and physiological responses over the subsequent 5 days. *Applied animal behaviour science*. 82:201-218
- Hielm-Bjorkman, AK; Kuusela, E; Liman, A; Markkola, A; Saarto, E; Huttunen, P; Leppaluoto, J. (2003) Evaluation of methods for assessment of pain associated with chronic osteoarthritis in dogs. *Journal of the American Veterinary Medical Association*. 222(11):1552-1558
- Jackson, TP; van Aarde, RJ. (2003) Advances in vertebrate pest control: implications for the control of feral house mice on Marion Island. *South African journal of science*. 99:130-136
- Janczak, AM; Pedersen, LJ; Rydhmer, L; Bakken, M. (2003) Relation between early fear and anxiety related behaviour and maternal ability in sows. *Applied animal behaviour science*. 82:121-135
- McGary, S; Estevez, I; Russek-Cohen, E. (2003) Reproductive and aggressive behaviour in male broiler breeders with varying fertility. *Applied animal behaviour science*. 82:29-44
- Morrison, RS; Hemsworth, PH; Cronin, GM; Campbell, RG. (2003) The social and feeding behaviour of growing pigs in deep-litter, large group housing systems. *Applied animal behaviour science*. 82:173-188.
- Warriss, PD. (2003) Optimal lairage times and conditions for slaughter pigs: a review. *The Veterinary Record*. 153:170-176

Post Script

In the 5th edition of RSPCA Australia's Science Update a paper was reported entitled: "An analysis of the forces required to drag sheep across various surfaces" in *Applied Ergonomics*. We reviewed this paper to show that there are many aspects of potential study for people/animal interactions, some more likely than others. We are pleased to note that this paper and the scientists involved have been awarded the 2003 IgNobel prize for physics, an annual prize given for research which "makes us laugh, and then makes us think". For more information see <http://www.improb.com/ig/ig-pastwinners.html#ig2003>.