



RSPCA AUSTRALIA

Animal welfare science update

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This is the sixth 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 Cat housing in rescue shelters

Feral and free roaming farm cats generally form stable groups of related females and their offspring around resources such as food and shelter. Groups tend to be about 10-15 individuals. Males are usually solitary, visiting females only to mate. Strange cats are treated with hostility or aggression. This behaviour raises concerns with the welfare of cats housed in shelters.

Kittens and young cats tend to be adopted quickly, but older cats may stay in a shelter for weeks or months before a suitable owner is found. The population in a shelter is seldom stable and consists of many unrelated cats, which can lead to welfare problems. This study looks at the effects of long-term housing of cats in shelters, specifically the effect on behaviour and stress response between cats in individual and group shelters.

The welfare of each cat was assessed by behavioural responses and preference observation based on the "Cat Stress Test" devised by Kessler and Turner. This is a non-invasive test that involves observing body movements, postures and activities of the cats such as eating, drinking, grooming, pacing, playing or fighting. The behaviours are classified between not stressed (sleeping, playing) and extremely stressed (prowling or motionless but alert).

72 cats were observed: 36 in group accommodation, 36 individually housed or housed with related cats, over a 6 week period. It was found that the overall stress score was higher for cats in communal housing than for individual housing. More cats expressed behaviour that indicated poor welfare in communal housing, but there were no reports of behaviour indicating extreme stress or very poor welfare in either housing strategy.

Ottway, D.S. Hawkins, D.M. (2003) Cat housing in rescue shelters: a welfare comparison between communal and discrete-unit housing. *Animal Welfare*. 12: 173-189.

2 Tail docking in dogs

This is a well researched and argued review of the issues involved in the tail docking debate. In certain breeds of dogs the tail is amputated when the pup is less than a week old, often without analgesia or anaesthesia. The main question asked is whether the benefits of tail docking in preventing injury to the dog (potential tail breaks or lesions) or owners preference (they enjoy having a tail-less dog) outweigh the risks and welfare problems associated with the initial amputation (acute pain and distress) and future difficulty associated with not having a tail (communication, chronic pain, abdominal complications). The paper concludes that although there may be cause for certain individual dogs to have their tails amputated, the welfare costs of blanket breed docking vastly outweigh the traditional arguments for the practice.

As a companion article to the review of the issues, the authors have published a discussion on changing attitudes to tail docking. They discuss the conflicting behaviours of some vets and breeders and relate these to a psychological theory called the “cognitive dissonance” theory. This theory tries to explain why some people display behaviour which differs from their stated beliefs (e.g. vets who continue to dock dogs’ tails, even though they know it causes pain to the pup), or has two ideas which conflict (e.g. a breeder who has the welfare of his dogs at heart, but still thinks docking is the best thing to do). The paper suggests that while changing legislation may help, it is a change in attitudes which will stop docking. Owners and new breeders who enter the debate without entrenched opinions or economic incentives, and are able to make an informed decision about the pros and cons of docking, are the ones who will make the ultimate change.

Bennett, P.C. Perini, E. (2003) Tail docking in dogs: a review of the issues. *Australian Veterinary Journal*. 81(4):208-218.

Bennett, P.C. Perini, E. (2003) Tail docking in dogs: can attitude change be achieved? *Australian Veterinary Journal*. 81(5):227-282.

Farm Animals

3 Sow behaviour in outdoor farrowing huts

In outdoor pig production systems crushing of piglets during their first 48 hours of life is an important concern. This study records the behaviours of sows giving birth to their first and second litters to better understand the events which lead to crushing death in piglets. Six large-white Landrace crosses were videoed constantly for 48 hours prior to and 48 hours after giving birth. The behaviour of the mother was recorded, and the number of times a piglet was caught beneath the mother and whether the piglet survived was noted. It was found that crushing was mainly due to the sow changing position quickly, and the larger the litter size the more piglets got caught. More piglets died when the mother was irritated, but no deaths were recorded due to savaging. The presence of a human reduced the incidence of crushing. The paper briefly describes some methods which may overcome these problems. They mostly involve physical barriers (bars or crates) or actually moving the piglets away from the mother as soon as they are born, but these methods have welfare concerns in themselves.

Vieuille, C. Berger, F. Le Pape, G. Bellanger, D. (2003) Sow behaviour involved in the crushing of piglets in outdoor farrowing huts – a brief report. *Applied Animal Behaviour Science*. 80:109-115

4 Space requirements in pigs

Pigs need a certain amount of space based on physical size and ability to perform normal behaviours such as eating, resting, waste elimination and social interactions. If they are not given enough space they may develop aberrant behaviour or physiological changes which are considered an indicator of poor welfare. This Dutch study expands on previous work involved in determining space requirements for pigs based on lying postures and space occupied in pens in an indoor housing system. Sixteen groups of eight pigs based on weight (30, 50, 80 and 100kg) in pens of 8m² were videotaped for 48 hours and their postural behaviour recorded. It was found that most pigs spent most of their time lying down as opposed to sitting or standing, and in this posture pigs were predominantly in a fully recombinant (on side with all 4 legs out) position rather than in a half recombinant (half on side, half on belly) or lying on the belly with legs tucked under. The time spent lying closely to another pig was also recorded and it was found that the heavier group, and therefore older pigs, spent more time close together. Based on these results and postural behaviours the authors calculated the average space taken by pigs of different weights, and found that this was more than the European Union standards. This work has important implications for pen design and legislation.

Ekkel, E.D. Spoolder, H.A.M. Hulsege, I. Hopster, H. (2003) Lying characteristics as determinants for space requirements in pigs. *Applied Animal Behaviour Science*. 80:19-30

5 Effects of castration on the growth and behaviour of pigs

Australian Codes of Practice recommend that surgical castration for grower pigs should be avoided due to welfare concerns. The procedure causes acute pain for the piglet, decreases the growth rate of the pig and causes increased fat content, but there is a growing overseas market demand for barrow meat (older, castrated male pig meat). A possible solution for these problems is immuno-castration, a new technique in which the animals are vaccinated just before puberty against their own gonadotropin-releasing hormone which prevents testes development. The advantages of immuno-castration appear to be that the young pigs grow quickly and produce leaner meat. The animals are castrated before puberty, and therefore spend less time in aggressive/courting behaviours and the meat does not have boar-taint. This study compared the social and feeding behaviours of groups of 50 entire males, immuno-castrated males and surgically castrated males. The animals were weighed weekly beginning at 17 weeks of age and video taped for a 24 hour period at 17 and 21 weeks to compare behaviours. Castrated males spent more time feeding than entire males and spent less time interacting with pen mates. Immuno-castrated males tended to be heavier than the other groups at the end of the experiment, with entire males being on average lightest. This paper focuses on the economic and production advantages of immuno-castration, but there are welfare benefits linked with this technique including decreased or minimal pain and distress associated with the vaccination technique and healthier, less aggressive mature animals.

Cronin, G.M. Dunshea, F.R. Butler, K.L. Cauley, I. Barnett, J.L. Hemsworth, P.H. (2003) The effects of immuno- and surgical-castration on the behaviour and consequently growth of group-housed, male finisher pigs. *Applied Animal Behaviour Science*. 81:111-126

6 Tail biting in pigs

Tail biting – when one pig takes the tail of another in its mouth and sucks or bites it - is considered an abnormal behaviour and can result in skin damage, bleeding, infection and mauling. Researchers are not sure what causes this problem, or how to alleviate it. This article reports on an epidemiological study done in the UK to try to identify risk factors associated with tail biting. Ninety-two pig farms were inspected over an 11-month period, and farmers and managers were interviewed regarding herd type, housing systems, management techniques and the incidence of tail biting. The results showed that a good supply of fresh straw each day greatly reduced the incidence of tail biting, but there were many factors, including floor type, stocking density, health and condition of pigs, tail docking, and stockman issues which seemed to increase tail biting. The survey may lead to detailed research into floor type, stocking density and stock management, and how this influenced tail biting.

Moinard, C. Mendl, M. Nicol, C.J. Green, L.E. (2003) A case study of on-farm risk factors for tail biting in pigs. *Applied Animal Behaviour Science*. 81:333-355

7 Conference lectures

Three papers are noted which summarised the keynote presentations from the annual International Congress of the International Society for Applied Ethology (ISAE) in 1999, 2000 and 2001.

In 1999 Paul Hemsworth discussed human-animal interactions in livestock production, and the influence stockpeople have on animal behaviour and welfare. He highlights the importance of the attitude the stockperson has to his/her animals and behaviour techniques that could be implemented to reduce fear and stress in farm animals.

In 2000 Jeffrey Rushen concentrated on welfare problems associated with different housing systems and why applied research is sometimes not complementing basic research in this area.

In 2001 Temple Grandin highlighted reasons why farmers often accept a new drug or machine, but find it hard to change their behaviour with respect to increasing animal welfare. She talks about her own experiences in transferring new research and technology from the lab to the farm and how to make this a success.

Hemsworth, P.H. (2003) Human-animal interactions in livestock production. *Applied Animal Behaviour Science*. 81:185-198

Rushen, J. (2003) Changing concepts of farm animal welfare: bridging the gap between applied and basic research. *Applied Animal Behavior Science*. 81:199-214

Animal research and experimentation

8 Assessing pain in lab animals

Where scientific procedures involving animals have the potential to cause pain, suffering and distress, such impacts must be minimised before, during and after the experiment. This article reports on a survey aimed to determine how researchers recognise, record and manage pain in UK scientific establishments. To get a broad idea of the situation, 28 institutions were surveyed covering universities, research centres and pharmaceutical companies and staff including scientists, vets, animal technicians and directors were interviewed.

Most interviewees agreed that the animals they work with may experience pain and stress due to their experiments, and that the assessment procedures are often subjective and depend on the experience and training of personnel. Two main points were highlighted by the survey: although there is concern for the welfare of laboratory animals, much of the welfare assessment in the organisations interviewed is subjective and there was no standard training policy; there also needs to be work developing methods for reviewing and refining current techniques with emphasis on pain recognition and reduction.

A related article reported on the 2001 RSPCA UK/UFAW (Universities Federation for Animal Welfare) Rodent Welfare Group Meeting. This summarized the work of the eight committee members and covered the work outlined above, as well as new methods for monitoring such as behavioural assessment, ultrasound and video recording, and gait and body temperature analysis. The paper discussed how these techniques could be applied before, during and after the experimental procedure to ensure maximum welfare for laboratory animals.

Hawkins, P. (2002) Recognising and assessing pain, suffering and distress in laboratory animals: a survey of current practice in the UK with recommendations. *Laboratory Animals*. 36:378-395

Hawkins, P. Roughan, J. Wilson, A. Sales, J. Clarke, K. Warn, P. Thornton, P. Jennings, M. Hubrecht, R. (2002) Assessing rodent wellbeing: Report of the 2001 RSPCA/UFAW Rodent Welfare Group meeting. *Animal Technology and Welfare*. April 2002. p3-11

9 Welfare of transgenic pigs

The development of transgenic pigs for donor organs is still in its infancy, but debate about the production of transgenic animals often focuses on moral or ethical issues and how they affect humans, rather than considering the implication for the welfare of the transgenic animal. This report considers some of the potential problems associated with the welfare of transgenic pigs produced for human transplantation. It focuses on problems encountered by transgenic mice with mutations in the α -gal gene (a gene encoding for a protein involved in organ rejection), such as vision impairments and increased susceptibility to septicaemia, and examines how these problems may be assessed or averted before α -gal knockout transgenic pigs are produced.

Dahl, K. Sandoe, P. Johnsen, P.F. Lassen, J. Kornerup Hansen, A. (2003) Outline of a risk assessment: the welfare of future xeno-donor pigs. *Animal Welfare*. 12:219-237

Animal welfare and the environment

10 Bait Outcomes

Poison baiting always has the risk of loosing baits or uptake by non-target species, with welfare problems associated with poisoning and suffering of these animals. This study looks at what happens to bait after it is planted. Small radio transmitters were embedded in dried kangaroo meat (with no poison present) and the outcome of the bait was monitored. The bait was either buried, tethered or dropped in a freshly raked sand plot, left overnight and located the following day. Based on track records in the sand, it was found that foxes visited 23% of plots - 64% of these foxes took the bait. 25% of the taken baits were reburied and from this 59% were eaten within three days. These results indicate that a considerable number of baits could be found by non-target species or uncollected during a poisoning campaign. Tracks show that other animals including birds, cats, reptiles and dogs visited plots during the study, with only 34% of these animals taking the bait and of these 38% consuming the bait. Many baits were taken by birds and dropped some distance away from the test plot. Again this could pose a problem with monitoring baiting campaigns. This was only a snapshot of the fate of baits on one night, but it does give some substantiation to issues involved with poison baiting.

Thomson, P.C. Kok, N.E. (2002) The fate of dried meat baits laid for fox control: the effects of bait presentation on take by foxes and non-target species, and on caching by foxes. *Wildlife research*. 29:371-377

11 Bait acceptability

A major concern with poisoned baiting is ingestion by non-target species. This report examines the amount of different types of bait eaten by a variety of Australian native animals. Three types of un-poisoned bait - Dried Meat Bait, Probait and FoxOff™ - were presented to 16 species of captive native animals, selected due to their prevalence in 1080 baiting areas, risk of consuming poisoned baits or concerns of poisoning impact raised by field operators. The amount of each type of bait consumed was recorded for each animal over a four - night period either with or without normal rations. Brown falcons did not touch any bait, therefore the risk of poisoning is minimal. Of the other animals examined, the Western quoll, common brushtail bandicoot, and brown rat consumed enough of each type of bait to raise concerns of theoretical risk in a poisoning campaign. These results should be taken into consideration when planning a baiting program, but other factors such as accessibility of baits and availability of other prey in the wild are also important.

Martin, G.R. Twigg, L.E. Marlow, N.J. Kirkpatrick, W.E. (the late) King, D.R. Gaikhorst, G. (2002) The acceptability of three types of predator baits to captive non-target animals. *Wildlife Research*. 29:489-502

Transportation of animals

12 The effect of journey and lairage time on steers

In Chile, cattle are produced all over the country but are slaughtered mainly in the capital city of Santiago. Animals are often deprived of food and water during transport and kept in storage lots at the slaughterhouse without food. The time spent between leaving the farm and slaughtering greatly affects the quality of meat, and this study looks at how transport and lairage time effects the weight of the animals and physical and chemical characteristics of the meat. Groups of 10 steers were set into journey times of 3 or 16 hours and lairage times of 3, 6, 12 or 24 hours. Each animal was weighed before transport, at arrival at the slaughterhouse, just before slaughter, and after processing. The pH and colour of muscle was recorded after processing. It was found that longer journey and storage time causes a significant decrease in the weight of the animals. The quality of meat also decreases with longer transport and lairage times. This is a welfare issue as the animal is losing weight and muscle quality due to starvation and exhaustion, but also is causing economic losses for the farmer who is paid based on carcass weight and for the slaughterhouse owners who sells inferior meat. The authors suggest that the economic pressures may be more of an incentive to decrease

farm to plate time, but the welfare benefits to the animals will also be a motivation for change. These results have a great relevance to cattle in Australia which relies of long distance transport heavily.

Gallo, C. Lizondo, G. Knowles, T.G. (2003) Effects of journey and lairage time on steers transported to slaughter in Chile. *The Veterinary Record*. 152:361-364.

13 Air transport and horses

With the increase of international competitions, flying has become a common method for transporting horses. A number of studies have examined the effect of road transport on the physiology and welfare of horses, but little work has been done on the effect of air transport. This study examines the heart rate and behaviour of horses during air transport and compares long haul flights of approximately 10-13 hours and shorter flights of 3-4 hours. Only one of the 25 horses observed had ever flown before. Heart rate monitors were fitted to each horse at the start of the journey, which included a short truck ride (80-200 min), and a familiar handler recorded the behaviour and posture of each horse. Heart rate was found to increase at the beginning of the road journey and decrease slightly during the journey but did not return to resting state. Heart rate went up during loading, ascent and decent, but while the plane was cruising the horses appeared to be in a very relaxed state. Aggressive or submissive behaviours towards neighbours were sometimes displayed during the changing periods, as were balancing postures. There was no significant difference between the heart rates or behaviour/postural displays on long or short journeys. This study indicates that horses adapt very well to air transport, and although there may be minor periods of stress during loading/unloading and ascent/decent, there appear to be no major welfare concerns with this form of transport.

Stewart, M. Foster, T.M. Waas, J.R. (2003) The effects of air transport on the behaviour and heart rate of horses. *Applied Animal Behaviour Science*. 80:143-160

Other recent articles

Archer, G.S. Friend, T.H. Piedrahita, J. Nevill, C.H. Walker, S. (2003) Behavioural variation among cloned pigs. *Applied Animal Behaviour Science*. 81:321-331

Baldock, F.C. Alexander, L. More, S.J. (2003) Estimated and predicted changes in the cat population of Australian households from 1979 to 2005. *Australian Veterinary Journal*. 81(5):289-292.

Hagelin, J. Hau, J. Carlsson, H-E. (2003) The refining influence of ethics committees on animal experimentation in Sweden. *Laboratory Animals*. 37:10-18

Hillmann, E. von Hollen, F. Bungler, B. Todt, D. Schrader, L. (2003) Farrowing conditions affect the reactions of piglets towards novel environment and social confrontation at weaning. *Applied Animal Behaviour Science*. 81:99-109

Jacob, J. Ylonen, H. Runcie, M.J. Jones, D.A. Singleton, G.R. (2003) What affects bait uptake by house mice in Australian grain fields? *Journal of Wildlife Management*. 67(2):341-351

King, T. Hemsworth, P.H. Coleman, G.J. (2003) Fear of novel and startling stimuli in domestic dogs. *Applied Animal Behaviour Science*. 82:45-64

Low, M. (2003) Stereotypies and behavioural medicine: confusions in current thinking. *Australian Veterinary Journal*. 81(4):192-198

McGreevy, P.D. Fougere, B. Collins, H. Bartimote, K.M. Thomson, P.C. (2002) Effect of declining owned-cat population on veterinary practices in Sydney. *Australian Veterinary Journal*. 80(12):740-745

Olsson, I.A.S. Nevison, C.M. Patterson-Kane, E.G. Sherwin, C.M. Van de Weerd, H.A. Wurbel, H. (2003) Understanding behaviour: the relevance of ethological approaches in laboratory animal science. *Applied Animal Behaviour Science*. 81:245-264

- O'Sullivan, C.B. Lumsden, J.B. (2003) Stress fractures of tibia and humerus in Thoroughbred racehorses: 99 cases (1992-2000). *Journal of the American Veterinary Medical Association*. 222(4):491-498
- Patterson-Kane, E.G. (2003) Shelter enrichment for rats. *Contemporary Topics*. 42(2):46-48
- Prescon, N.B Wathers, C.M. Jarvis, J.R. (2003) Light, vision and the welfare of poultry. *Animal Welfare*. 12:269-288
- Raj, A.B.M. (2003) A critical appraisal of electrical stunning in chickens. *World's Poultry Science Journal*. 59:89-98
- Robley, A.J. Short, J. Bradley, S. (2002) Do European rabbits (*Oryctolagus cuniculus*) influence the population ecology of the burrowing bettong (*Bettongia lesueri*)? *Wildlife Research*. 29:423-429
- Sherwin, C.M. Christiansen, S.B. Duncan, I.J. Erhard, H.W. Lay, J.C. Mench, J.A. O'Connor, C.E.O. Petherick, J.C. (2003) Guidelines for the ethical use of animals in applied ethology studies. *Applied Animal Behaviour Science*. 81:291-305
- Short, J. Turner, B. Risbey, D. (2002) Control of feral cats for nature conservation. III. Trapping. *Wildlife Research*. 29:475-487
- Whay, H.R. Main, D.C.J. Green, L.E. Webster, A.J.F. (2003) Animal based measures for the assessment of welfare state of dairy cattle, pigs and laying hens: consensus of expert opinion. *Animal Welfare*. 12: 205-217