Australian Cattle Dog Health Status Report 2008
Alison Skipper MA Vet MB Cert VR MRCVS

I am honoured to have been asked by the Australian Cattle Dog Society of Great Britain to report on the health status of our breed. I obtained my first Australian Cattle Dog within a week of qualifying as a veterinary surgeon, just under twenty years ago, and have owned five cattle dogs during this time. I was an active committee member for nine years, and have been a vice-president of the society for some time. I have taken an active role in health initiatives within the breed, both within the UK and internationally. As well as being a vet, I have a Cambridge MA in physical anthropology, which included training in genetics of individuals and populations, so I have been able to advise the society on genetics issues. I welcome the Kennel Club's increased efforts to improve the health of pedigree dogs, while noting that both the Kennel Club and responsible breeders have already been making substantial efforts in this direction for many years.

Inherited health issues in pedigree dogs can be divided into two basic categories:

a) those directly resulting from the conformation or breed standards of particular breeds, such as respiratory problems in brachycephalic breeds
b) those resulting from inherited diseases, which are not the direct consequence of particular breed standards but the result of breeding within closed gene pools where particular deleterious gene alleles happen to exist, such as the genes which cause the various types of progressive retinal atrophy (PRA).

a) With respect to the first category of problem, the Australian Cattle Dog is one of the few breeds which, in conformation, is very close to the ancestral, wild type of dog: naturally, the influence of Dingo blood during the creation of the breed has to a large extent accounted for this. The ACD has a head and jaw of medium length, free from exaggeration; it has erect ears, a weatherproof double coat, balanced body proportions and length of leg. It is a dog intended to work hard in a harsh environment, and therefore to be sound and athletic. The breed standard begins with, "Strong, compact, symmetrical, with substance, power and balance. Hard muscular condition conveys agility, strength and endurance," and other requirements throughout the standard reinforce this intention. Modifications to the basic canine body structure that are found only in domestic dogs, such as drop ears, a shortened nose, short legs or a highly modified coat, are all absent from the ACD. Therefore, overall, our breed standard promotes good health rather than being a possible barrier to it, and the conformation required by the breed standard does not compromise welfare in any way. The one exception to this is in the area of coat colour. One of the distinctive features of an Australian Cattle Dog, which distinguishes it from a Kelpie to the untrained eye, is the mixture of red or black hairs with white hairs throughout the coat, which creates an overall impression of a red speckled or blue coat (with tan markings, in the case of the blue colouring). Puppies are born white, and the coloured hairs gradually appear during the first weeks of life. The white colouring at birth is caused by the extreme white spotting gene, which also causes the underlying white colour of several other breeds, including Dalmatians and white English Bull Terriers. As with these other breeds, ACD puppies can sometimes be born

deaf in one or both ears. As far as we know, this deafness is linked to the white colouration because pigment cells and hearing cells are linked during embryonic development. In ACDs, as in Dalmatians, some individuals are born with solid coloured patches on the head (which is encouraged in the ACD breed standard though not in Dalmatians), and/or on the body. Research in Dalmatians in Scandinavia has suggested that individuals with brown (rather than blue) eyes and head markings may be statistically less at risk from deafness than those with minimal pigment, although having head patches is not an automatic guarantee that a puppy will have normal hearing. To completely eliminate inherited deafness from the ACD, in our present state of knowledge, the breed standard would have to be changed so that the distinctive colouration was replaced by solid colours such as are found in the Kelpie, which would be almost impossible given that every ACD worldwide is born white. However, one alteration that might be useful would be to remove the breed standard wording that discourages body patches. If dogs with body patches were not discouraged, the general level of head and body patches within the breed would possibly increase, and the percentage of deaf puppies produced might, in consequence, decrease, because on average dogs would be born with more solid pigment.

It should be noted that, in spite of erroneous statements to the contrary in many academic papers, the Australian Cattle Dog breed does not have, and never has had, the merle gene.

In summary: in my opinion, the only statement in the Australian Cattle Dog breed standard that has any possible adverse health consequences is the required colour, which is inextricably linked with congenital deafness in the breed. Removing the sentences in the standard that discourage body patches might slightly reduce the levels of deafness.

b) Moving on to inherited conditions within the breed:

i) Inherited deafness has already been discussed in some detail above. The ACD community in the UK is generally well aware of inherited deafness, and the vast majority of puppies are hearing tested before sale at one of the specialised facilities for this purpose: UK ACD breeders have been BAER testing puppies since 1995. Because there is no centralised database of hearing test results, it is hard to know what the overall level of deafness in the breed is. I last obtained information in 2004, when I compiled a health report for the breed to accompany its change to CC status. At that time, 86% of dogs tested at the two main centres in the UK had bilaterally normal hearing, 12.5% had unilateral hearing and 1.5% were bilaterally deaf (326 dogs in total). I know of no reason why these percentages should have altered significantly since. There is an ethical dilemma in producing bilaterally deaf puppies, since either they must be euthenased or found particularly skilful and caring homes. Unilaterally deaf dogs can lead normal lives and do not suffer from the condition (I have owned one myself), but it is generally agreed that they should not be bred from unless there are exceptional considerations.

ii) The Australian Cattle Dog worldwide has historically had a significant problem with the crpd type of inherited progressive retinal atrophy (PRA), and is listed for this disease under Schedule A on the KC/BVA scheme. The form in the ACD was particularly hard to deal with, because it could be of extremely late onset in some cases, so that an affected animal might have normal vision even in old age, and early onset in others, so that another dog might be blind by the age of 4, with the consequent welfare implications.

The worldwide ACD community worked together in the early days of the Internet, from 1995 onwards, to support research into a gene test for the disease. The internationally known veterinary ophthalmologist, Greg Acland from Cornell University, visited the UK in the summer of 1996, with the full support and co-operation of the ACD Society of Great Britain, to examine our closely related population of ACDs in his efforts to develop a gene test. As a direct result of samples provided by more than 70 ACDs in the UK and others in Europe and the US, OptiGen (the commercial arm of Cornell) released a gene linkage test for PRA in the ACD in 2002, which was replaced by a test for the gene itself late in 2004. Worldwide, the linkage test provided results that were accurately replicated by the gene test itself, the only exception being in the UK, where a significant number of dogs were found to have a recombination that meant their PRA status improved when the gene test itself was released. As a result of our heavy involvement in the original work developing the test, at the time of the test's release we knew, directly or by close pedigree analysis, the PRA status of most UK ACDs. At that time, about 25% of the population were Pattern A (clear of the disease), 50% were pattern B (carriers) and 25% were pattern C (affected). Since the test's release, the vast majority of breeders have planned matings carefully to avoid the production of affected puppies, and so the percentages in the current population of young stock should be very different. However, we have no way of proving this, because in the last couple of years very, very few UK ACDs have had gene tests carried out at OptiGen. Presumably breeders are using logical deduction to infer the PRA status of current breeding stock from that of the parents or grandparents. While this is understandable, and certainly there should be no need to screen whole litters in most cases, I would strongly encourage people to continue to have breeding stock tested, even if they think they know the results: over multiple generations, errors can creep in in various ways (through mismatings, clerical errors, or mutations, for example), and I am concerned that we are in danger of becoming complacent and underusing the excellent tool that we worked so hard to achieve. Moreover, now that there is a specific gene test, the KC will endorse registrations with this information, which reduces the possibility of deliberate or accidental error still further, and is something that I think we should strongly be supporting, especially for stud dogs.

i) As far as we know, prcd is the only inherited eye disease that causes a significant problem within the breed. However, there are many other potentially inherited eye diseases, such as glaucoma and cataracts, which have been reported sporadically in ACDs. Greg Acland recommended that any dogs intended for breeding should be examined under the KC/BVA eye scheme, by a veterinary ophthalmologist, twice during their lives: as young adults, before

being bred from, and in later life, perhaps at the age of 7 or 8 (while the KC/BVA scheme suggests annual testing, I realise that this is a counsel of perfection). This baseline monitering should enable other conditions to be recognised quickly if they were to appear within the breed. I am not at all sure that most breeding stock is being checked in this way.

ii) Relatively few ACDs have been hip scored in the UK. As of Nov 2007 (the most recent data on the BVA website), 36 ACDs had been scored in total, with scores ranging from 5 to 23, and a breed average of 11 (more have been scored since, I am aware). While this looks as if there is no problem with hip dysplasia in UK ACDs, we know that UK stock is closely related to the population in Europe, where hip dysplasia has often been reported. 80 ACDs were registered with the Kennel Club in 2007; this is comparable to the Groenendael, which is another pastoral breed with 92 registrations in 2007. The Groenendael also has a breed average score of 11, but as of November 2007, 409 Groenendaels had been scored (only since 2000, when BSD registrations were split, too), with scores ranging from 0 to 104. That means that, in a breed with similar registrations and an identical breed average score, ten times more Groenendaels than ACDs have been hip scored, and some of them have proved to have severe hip dysplasia. I think it is self evident that we could be doing more to check for this problem. i) Elbow dysplasia is an inherited condition that is known to have occurred in siblings in UK ACDs on at least one occasion. To the best of my knowledge, 38 ACDs have been elbow scored in the UK. 25 of these (66%) had a score of 0 (no dysplasia), 9 (24%) had a score of 1, and 4 (10%) had a score of 2 or 3, and thus had significant dysplasia.

Unfortunately, there is no published list of elbow scoring statistics on the BVA website, so I have no firm data on how the ACD compares with other breeds. It is encouraging that a fair number have been scored, given that the problem was first recognised in the UK population only in 2004. Since elbow arthritis can cause significant welfare problems in the older dog, I would suggest that elbow scoring would be a sensible precaution for all breeding stock.

ii) Other diseases that are sometimes, but not always, inherited, such as epilepsy or hepatic shunts, have been reported from time to time in ACDs, but are currently so infrequent in the UK that there is no strong suspicion that the inherited forms of these diseases are significant here.

iii) Other inherited diseases, such as ceroid lipofuscinosis or lysosomal storage disease, have been reported in the ACD in the scientific literature, but there is no evidence that these ailments are a significant problem in the wider breed, or that they have occurred in the UK at all.

In summary, the inherited diseases that are a significant problem in the ACD in the UK are

a) inherited congenital deafness

b) prcd PRA

c) elbow dysplasia

In addition, worldwide data suggests we should be aware of

d) hip dysplasia and e) other inherited eye problems.

My recommendations would be

a) that breeding stock is screened for PRA, at least every second generation, using the OptiGen gene test

b) that breeding stock is examined during early adulthood and later life (twice) by an ophthalmologist, under the KC/BVA scheme, for other eye diseases

c) that breeding stock is hip and elbow scored before use

d) that only hearing tested stock are bred from, and that bilaterally hearing dogs should be used wherever possible.

Overall, I think the ACD community has considerable awareness of these problems, but has some way to go in fully screening all stock for all the significant problems in the breed.

Thank you for the opportunity to make this report.