THE KENNEL CLUB
DOG HEALTH

Breed Health and Conservation Plan

Breed

Year

INTRODUCTION

The Kennel Club launched a dynamic new resource for breed clubs and individual breeders – the Breed Health and Conservation Plans (BHCP) project – in September 2016. The purpose of the project is to ensure that all health concerns for a breed are identified through evidence-based criteria, and that breeders are provided with useful information and resources to support them in making balanced breeding decisions that make health a priority.

The Breed Health and Conservation Plans take a holistic view of breed health with consideration to the following issues: known inherited conditions, complex conditions (i.e. those involving many genes and environmental effects such as nutrition or exercise levels, for example hip dysplasia), conformational concerns and population genetics.

Sources of evidence and data have been collated into an evidence base (Section 1 of the BHCP) which gives clear indications of the most significant health conditions in each breed, in terms of prevalence and impact. Once the evidence base document has been produced it is discussed with the relevant Breed Health Coordinator and breed health committee or representatives if applicable. Priorities are agreed and laid out in Section 2. A collaborative action plan for the health of the breed is then agreed and incorporated as Section 3 of the BHCP. This will be monitored and reviewed.

SECTION 1: EVIDENCE BASE

Breed Watch status?

Vulnerable native breed?

<u>Demographics</u>

Table 1: Number of breed registered per year between year and year

Trend (and confidence intervals) if available, and interpretation. [Put simply, 95% confidence intervals (C.I.s) indicate that we are 95% confident that the true estimate of a parameter lies between the lower and upper number stated.]

Figure 1: Number of registrations of breed per year of birth, 1980 – 2016

Literature review

The literature review lays out the current scientific knowledge relating to the health of the breed. We have attempted to refer primarily to research which has been published in peer-reviewed scientific journals. We have also attempted to acknowledge possible limitations of the studies reported, including when the research involved dogs in other countries. Whilst there are often strong links between populations of a breed in different countries, there are also often differences between the populations and issues seen in one country may not be seen (or may have a different prevalence) in another. However, it may also be useful for United Kingdom (UK) breeders to be aware of conditions occurring in the breed in other countries which have not yet been seen in the UK population, especially given that movement of breeding stock does occur between countries.

Cardiovascular conditions

Dermatological conditions

Endocrine conditions

Gastrointestinal conditions

Haematological conditions

Hepatic conditions

Immunological conditions

Musculoskeletal conditions

Neoplastic conditions

Neurological conditions

Ocular conditions

Table 2: ACVO examination results for breed, 2000 - 2015

Disease Category/Name	Percentage of Dogs Affected		
	2000-2009 (n=)	**2010-2014** (n=)	**2015** (n=)
Category			
Condition 1			
Condition 2			

Reproductive conditions

Respiratory conditions

Urological conditions

Purebred/pedigree dog health survey results

2004 Morbidity results:

2004 Mortality results:

2014 Morbidity results:

2014 Mortality results:

VetCompass results

Breed-specific study if available (small number of breeds)

Insurance data

UK Agria data (all breeds)

Insurance data were available for dogs insured with Agria UK. It was difficult to determine the underlying population at risk for these conditions so prevalence estimates were not available for these conditions, nevertheless the number of settlements due to particular conditions provides useful information about the relative frequency of these conditions. Data relating to two different types of policies were supplied. Full policies are available to dogs of any age. Free policies are available to breeders of Kennel Club registered puppies and cover starts from the time the puppy is collected by the new owner; cover under free policies lasts for five weeks from this time. It can be assumed that settlements under full policies, as shown in Table 4, refer to dogs outside of the initial five week free period; settlements under free policies, shown in Table 5, will have occurred in the five week free period and will therefore relate to young puppies. It is possible that one dog could have more

than one settlement for a condition within the 12-month period shown. 'Benefit other than vet fees' refers most commonly to a claim for death of the dog but can also cover travel costs, boarding fees and advertising for lost dogs.

Swedish Agria data (some breeds)

Swedish Agria insurance morbidity data

Swedish Agria insurance mortality data

Breed-specific health surveys

If available

Visual health check reports/clinical reports/judges' health monitoring

For Breed Watch category 2 and 3 breeds.

Table 5: Judges' health monitoring reports for 2015 and 2016. Those marked with a * indicate newly reported points of concern.

Point of concern	2015	2016

Breed Club health activities

BHC annual report

DNA test results

Canine Health Scheme results and EBVs

Which, if any, of the BVA/KC Canine Health Schemes are requirements or recommendations under the Kennel Club's Assured Breeder Scheme. Even if none are, participation in all the schemes is open to dogs of any breed. Estimated breeding values (EBVs) are currently only available for breeds with large numbers of dogs with hip and elbow scores for the respective EBV.

HIPS

How many dogs of the breed have participated in the scheme and what are the results. Distribution of EBVs, if available.

ELBOWS

How many dogs of the breed have participated in the scheme and what are the results. Distribution of EBVs, if available.

EYES

The breed is not currently on Schedule A or B for any condition under the BVA/KC/International Sheep Dog Society (ISDS) Eye Scheme. Schedule A lists the known inherited eye conditions in the breeds where there is enough scientific information to show that the condition is inherited in the breed, often including the actual mode of inheritance and in some cases even a DNA test. Schedule B lists those breeds in which the conditions are, at this stage, only suspected of being inherited. However, the BVA still records the results of dogs of other breeds which have participated in the scheme. The results of Eye Scheme examinations of the breed which have taken place since 2012 are shown in Table 8.

Table 6: Reports on dogs of the breed which have participated in the BVA/KC/ISDS Eye Scheme since 2010

CM/SM

How many dogs of the breed have participated in the scheme and what are the results.

Breed Club Recommendations

Reported caesarean sections

When breeders register a litter of puppies, they are asked to indicate whether the litter was delivered (in whole or in part) by caesarean section. In addition, veterinary surgeons are asked to report caesarean sections they perform on Kennel Club registered bitches. The consent of the Kennel Club registered dog owner releases the veterinary surgeon from the professional obligation to maintain confidentiality (vide the Kennel Club General Code of Ethics (2)). There are some caveats to the associated data; it is doubtful that all caesarean sections are reported, so the number reported each year may not represent the true proportion of caesarean sections undertaken in each breed. In addition, these data do not indicate whether the caesarean sections were emergency or elective. The number of litters registered per year for the breed and the number and percentage of reported caesarean sections in the breed for the past 10 years are shown in Table 7.

Table 7: Number and percentage of litters of breed registered per year and number of caesarean sections reported per year, 2008 to 2017.

Year	Number of Litters Registered	Number of C-sections	Percentage of C-sections
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			

Genetic diversity measures

The effective population size is the number of breeding animals in an idealised, hypothetical population that would be expected to show the same rate of loss of genetic diversity (rate of inbreeding) as the population in question; it can be thought of as the size of the ‘gene pool’ of the breed. In the population analysis undertaken by the Kennel Club in 2015, an estimated effective population size of n was reported (estimated using the rate of inbreeding over the period 1980-2014). An effective population size of less than 100 (inbreeding rate of 0.50% per generation) leads to a dramatic increase in the rate of loss of genetic diversity in a breed/population (Food & Agriculture Organisation of the United Nations, “Monitoring animal genetic resources and criteria for prioritization of breeds”, 1992).

Annual mean observed inbreeding coefficient (showing loss of genetic diversity) and mean expected inbreeding coefficient (from simulated 'random mating') over the period 1980-2014 are shown in Figure 2. For full interpretation see Lewis et al, 2015 https://cgejournal.biomedcentral.com/articles/10.1186/s40575-015-0027-4.

The current annual breed average inbreeding coefficient is %. This value is calculated each June and represents the average inbreeding coefficient of all dogs of the breed registered between January and December of the previous year i.e. in 2016.

Figure 2: Annual mean observed and expected inbreeding coefficients.

Below is a histogram ('tally' distribution) of number of progeny per sire and dam over each of seven five-year blocks (Figure 3). A longer 'tail' on the distribution of progeny per sire is indicative of 'popular sires' (few sires with a very large number of offspring, known to be a major contributor to a high rate of inbreeding).

Figure 3: Distribution of progeny per sire (blue) and per dam (red) over 5-year blocks (1980-4 top, 2010-14 bottom). Vertical axis is a logarithmic scale.

Current research projects

SECTION 2: PRIORITIES

Agreed collaboratively at a meeting with the breed after completion of evidence base.

SECTION 3: ACTION PLAN

Agreed collaboratively at a meeting with the breed after completion of evidence base.

Approximate review date also agreed.

References

Lewis, T.W., Abhayaratne, B.M. and Blott, S.C. (2015) Trends in genetic diversity for all Kennel Club registered pedigree dog breeds. *Canine Genetics and Epidemiology* **2**:13 https://doi.org/10.1186/s40575-015-0027-4 [Accessed 18/08/2017]