Bearded Collie Health Survey 2021

This is the fourth year in which we have carried out a yearly health survey. In recent years although showing fluctuations there has been an overall downward trend in registration figures - data from the Kennel Club (Kennel Club, 2021).

Year	Registration numbers
2011	547
2012	480
2013	552
2014	371
2015	346
2016	284
2017	420
2018	274
2019	307
2020	268

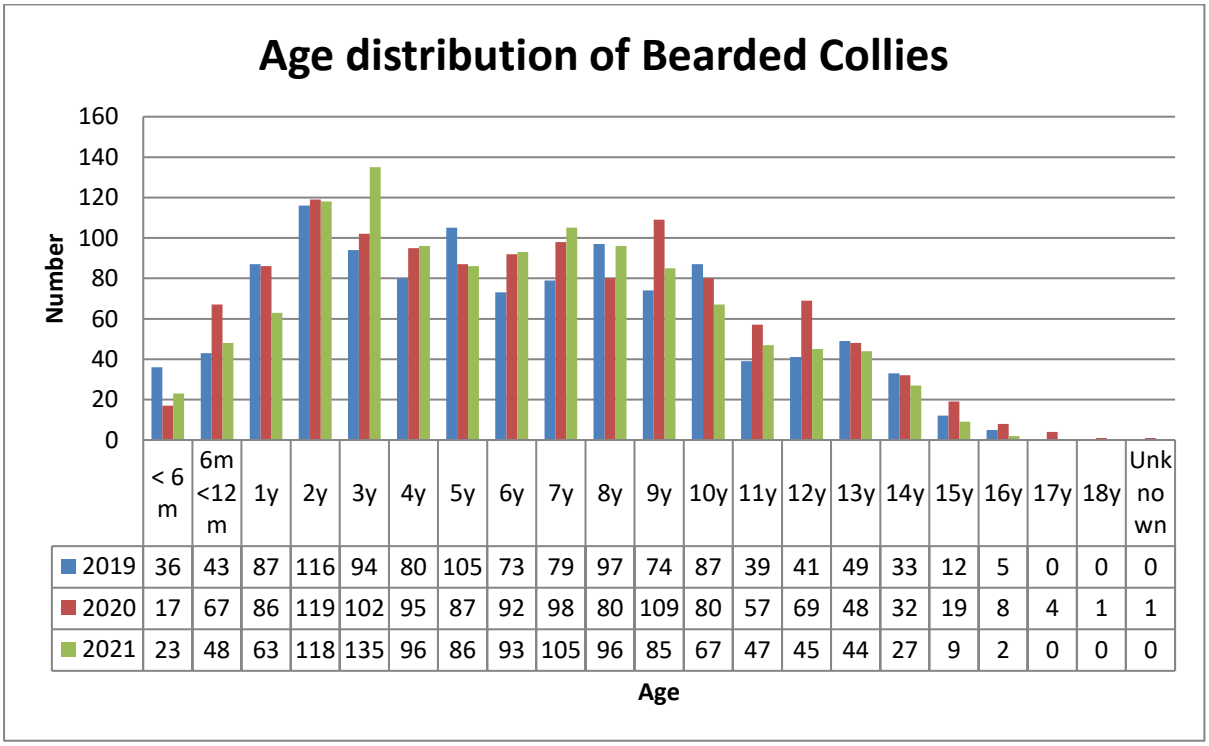
In 2016 the numbers fell below the 300 mark which meant we were classified as a vulnerable breed by the Kennel Club (KC) and although the numbers recovered slightly in 2017 in 2018

we again fell into the vulnerable breed category with registration figures reaching 274 and in 2019 we were only just above 300 puppies. In 2020 we had our lowest ever registration figure of 268 puppies but this should be interpreted with a degree of caution as the world was in the middle of the Covid-19 pandemic and lockdowns and restriction of travel meant that many breeding plans just could not take place. This survey is a follow up to the surveys taken in February 2018 to February 2020 and is designed to be repeated on an annual basis so that we can observe trends in health within the breed rather than looking at a single snapshot. To this end a survey was designed that was not too detailed in order to encourage maximum participation and obtain data on as many dogs as possible to get an accurate picture on the health of the breed. A few questions were added in 2019 in response to drawing up the Breed Health and Conservation Plan (BHCP) in conjunction with the Kennel Club. This final survey consisted of seventeen questions with either Yes/No or short answers and was designed to be user-friendly.

Data was received on 1189 dogs of which fifteen had died in the year leading up to February 2021.

Ages

The age range of Bearded Collies showed a distribution up to 16 years confirming previous studies which have showing that the Bearded Collie can be a very long-lived breed. (O'Neill et al., 2013)



	< 6 m	6m <12 m	1y	2y	3y	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y	16y	17y	18y	Unknown
2019	36	43	87	116	94	80	105	73	79	97	74	87	39	41	49	33	12	5	0	0	0
2020	17	67	86	119	102	95	87	92	98	80	109	80	57	69	48	32	19	8	4	1	1
2021	23	48	63	118	135	96	86	93	105	96	85	67	47	45	44	27	9	2	0	0	0

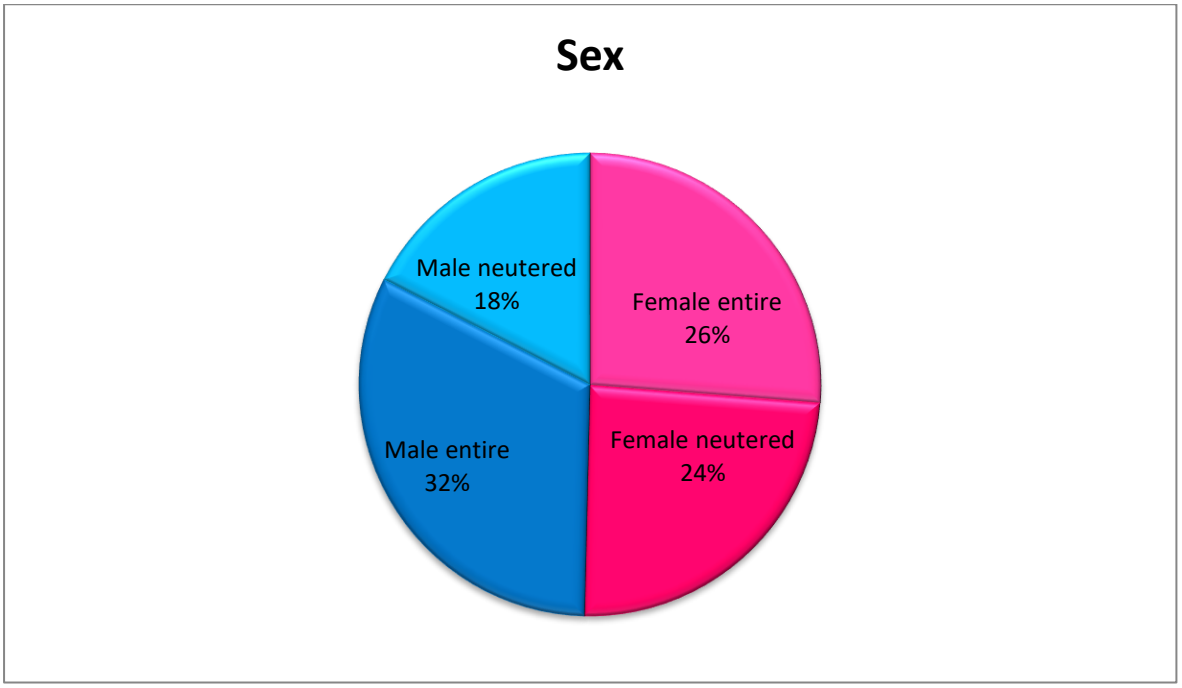
The dogs that had died were distributed in age from 4 years to 17 years and died from a variety of different causes which is tabulated below.

Age (Years)	**Sex**	**Cause of death (as stated by owner)**
8 years	ME	Vestibular syndrome
15 years	FE	Vestibular syndrome
11 years	FN	Kidney disease
11 years	ME	Unknown
5 years	MN	Unknown
9 years	ME	Malignant skin tumour
10 years	MN	Insulinoma
13 years	MN	Unknown
7 years	ME	Osteosarcoma of the spine
10 years	FE	Pyometra
14 years	FN	Unknown
15 years	FE	Unknown
15 years	FE	Unknown
11 years	ME	Mouth tumour
11 years	FN	Seizures, vestibular syndrome and kidney disease

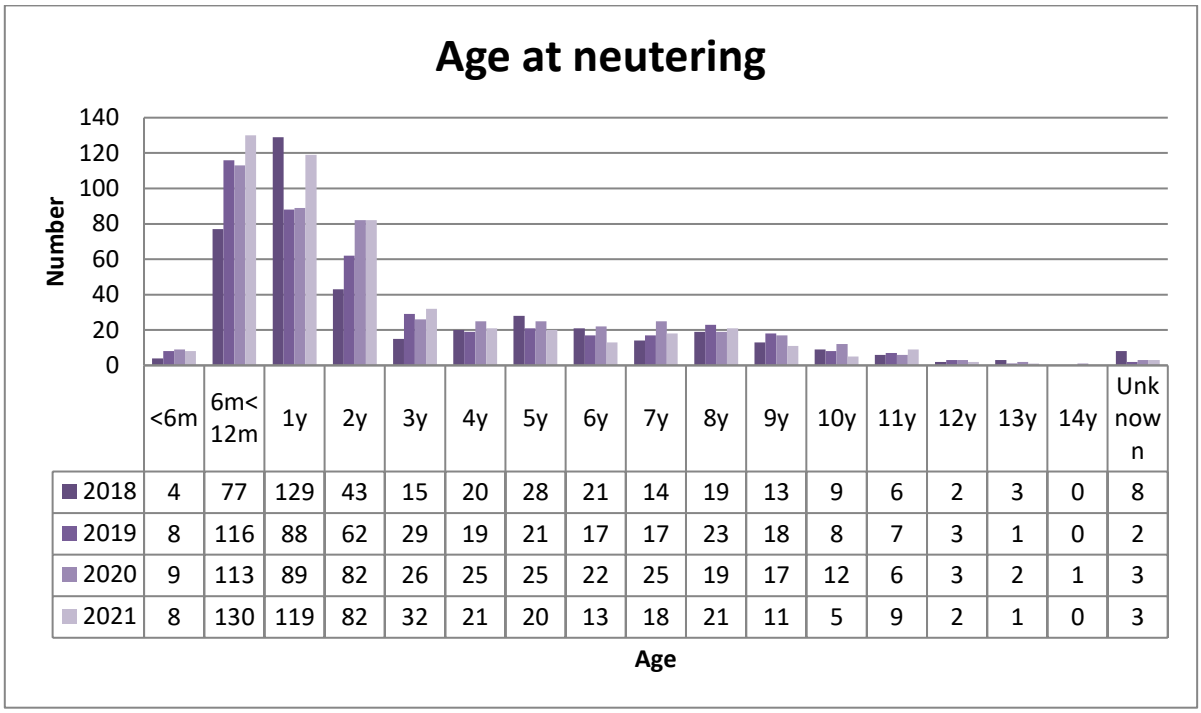
FE = female entire
FN = female neutered
ME = male entire
MN = male neutered

Most dogs that had died were above 10 years of age apart from four younger dogs.

Distribution of sexes and number of dogs neutered



Female dogs represented 50% of the population and male dogs represented 50%. A total of 495 Bearded Collies were neutered representing 41.6% of the total population. This is much lower than the average neutering rate for pet dogs of 71% (PAW report, 2020) which probably reflects the fact that this survey was distributed widely among many people who breed as well as pet owners and therefore includes some of the breeding population. Other factors may also be involved such as the fact that neutering can cause coat changes, which is more evident in a long coated breed and there is now increased knowledge of the fact that not all effects of neutering are positive.

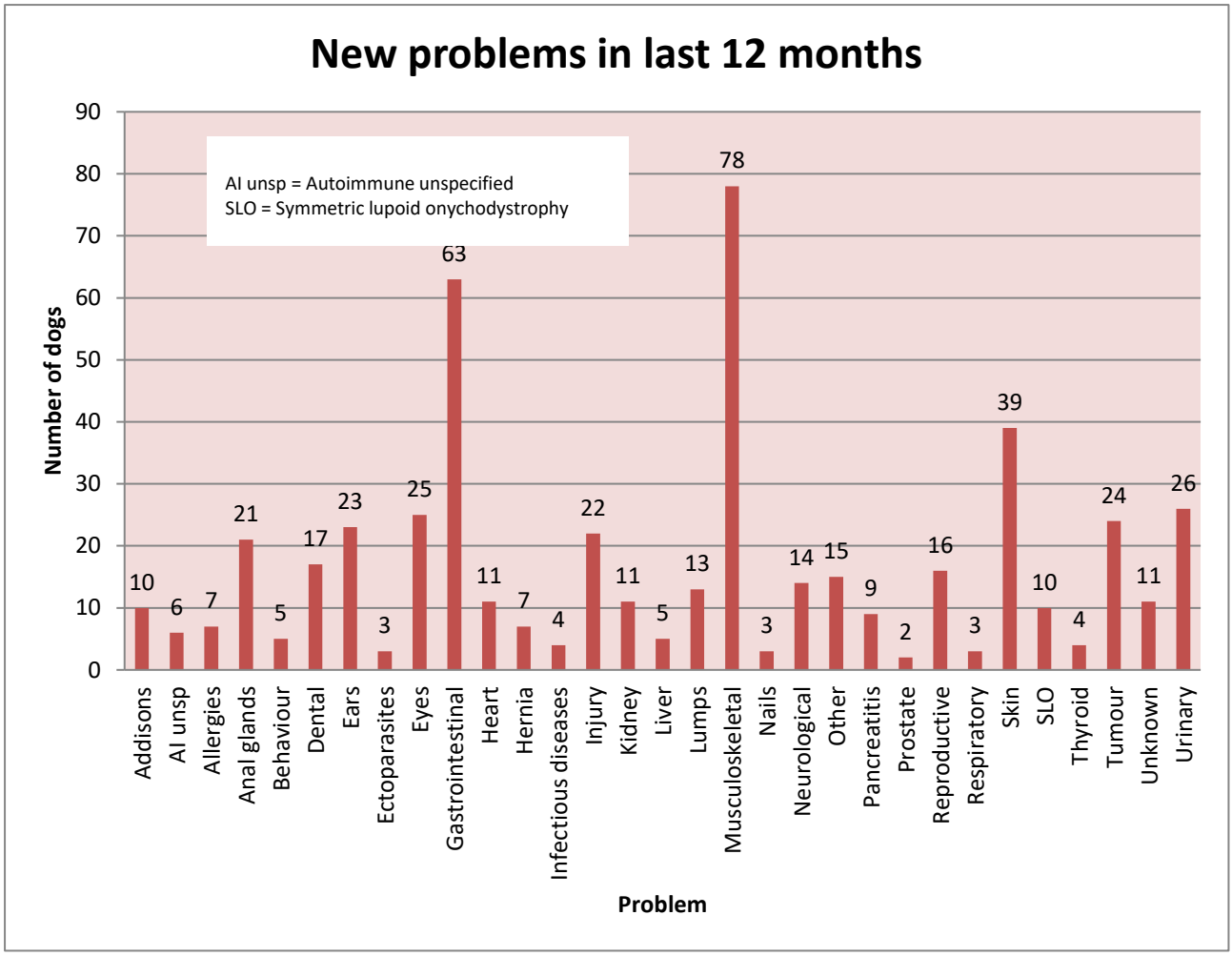


	<6m	6m< 12m	1y	2y	3y	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	Unknown
2018	4	77	129	43	15	20	28	21	14	19	13	9	6	2	3	0	8
2019	8	116	88	62	29	19	21	17	17	23	18	8	7	3	1	0	2
2020	9	113	89	82	26	25	25	22	25	19	17	12	6	3	2	1	3
2021	8	130	119	82	32	21	20	13	18	21	11	5	9	2	1	0	3

As would be expected in line with most pets neutered, the age of neutering was positively skewed with the vast majority of dogs neutered young, there were a small number (3 dogs) where age of neutering was not known. One hundred and thirty eight dogs were neutered under 12 months of age. Recent research published which appears to be very breed specific is showing in some breeds that there is an increase in orthopaedic problems such as hip dysplasia, elbow dysplasia and cruciate disease in dogs neutered earlier and also certain types of cancer and some behavioural problems. (Hart et al. 2014, Hart et al, 2016 and Zink et al. 2014) Of the dogs neutered under 12 months 1 dog (0.7%) was diagnosed with elbow dysplasia and 3 dogs (2.2%) were diagnosed with hip dysplasia. This compares with a prevalence of 3.4% for elbow dysplasia and 1.7% for hip dysplasia in the total population in the survey. Only one dog (0.7%) neutered under 12 months of age was later diagnosed with cruciate disease. Nine dogs (6.5%) neutered under 12 months went on to develop autoimmune disease which was the same as the prevalence in the total population in the survey.

1. Episodes of new disease requiring veterinary attention in the last 12 months.

401 dogs (33.7%) were reported to have received veterinary attention for one or more new problems in the last 12 months. A total of 507 problems were reported.



The group of new problems most commonly reported were musculoskeletal conditions as in the 2018-2020 surveys with 78 instances reported. These were broken down as follows:

Condition	Number of dogs
Arthritis	40
Cruciate disease	3
Elbow dysplasia	3
Hip dysplasia	5
Lameness none specific	6
Injury	9
Other conditions	12

Other conditions included disc injuries, trapped nerves, none specified joint issues, spondylitis and painful joints Given that 241 dogs are aged 10 years and older (20% of the total sample) it is hardly surprising that arthritis is the most common condition reported in this section.

Numbers of dogs with Elbow dysplasia and Hip dysplasia will be monitored in the breed health survey on an ongoing basis as there is a hereditary component to both these diseases. At the moment there is a requirement to hip score before breeding but not to elbow score but we are monitoring this situation as part of the Breed Health and Conservation Plan (BHCP) drawn up with the KC. It is encouraging to see that even though the KC do not require it many breeders are starting to elbow score at the same time as they hip score.

Immune mediated disease

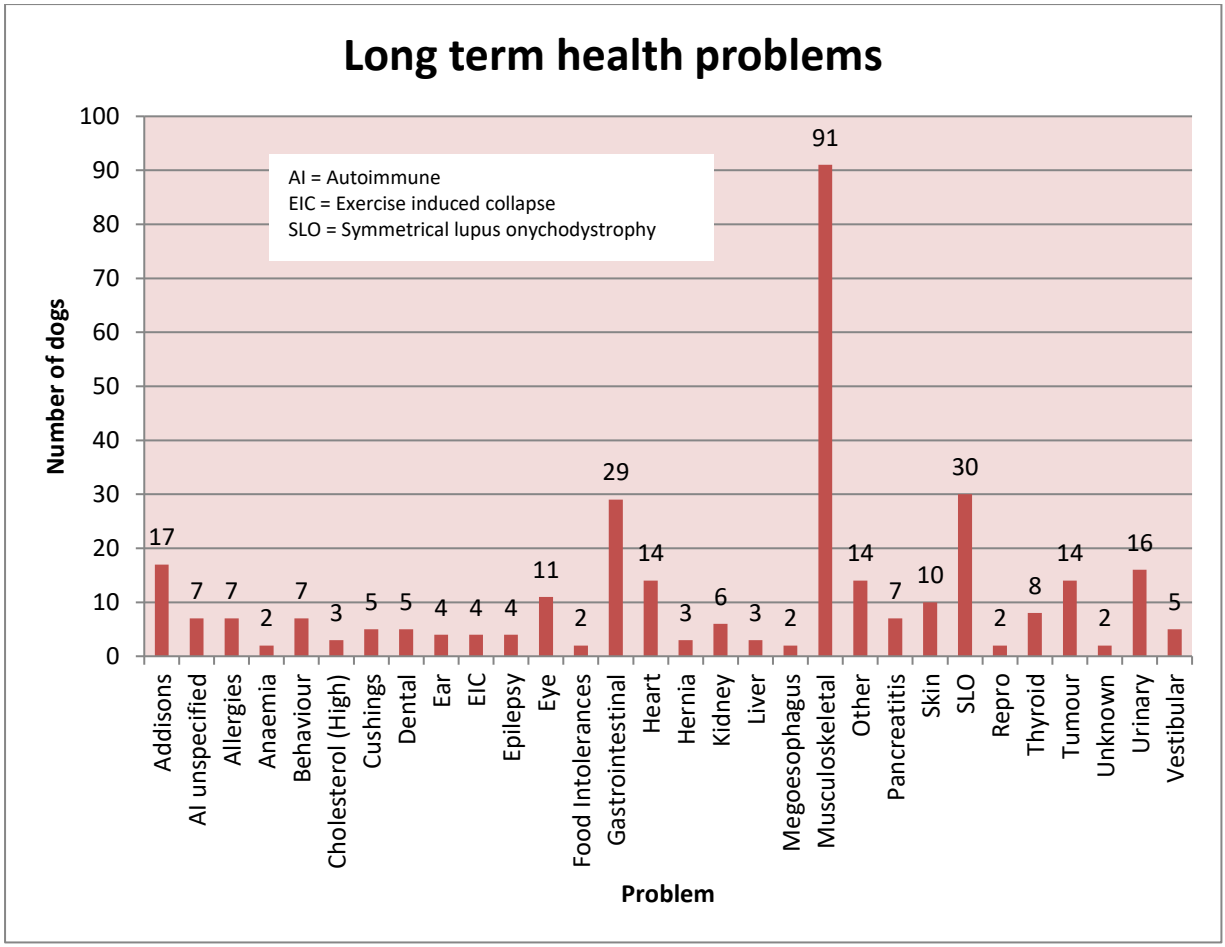
A breakdown of the incidence of immune mediated disease diagnosed in the preceding 12 months is given below.

Autoimmune disease	Number of cases
Addison's	10
AI unspecified	6
Anal furunculosis	1
IM thrombocytopaenia	1
Masticatory Myositis	1
SLO	10
Thyroid disease	4
Total	33

Autoimmune disease represents 6.5% of the new problems with which dogs were taken to visit their veterinary surgeons in the preceding 12 months compared with 6.8% in the 2018 survey, 5.9% in the 2019 survey and 8% in the 2020 survey.

2. Bearded Collies with long term health problems

275 dogs (23.1%) were reported to be suffering from one or more long term health problems representing 334 long term problems.



As with new problems the largest category was musculoskeletal disease with 91 reported problems which represents 27.2% of all the long-term health problems. Of the musculoskeletal problems 69 of the 91 problems (75.8%) were suffering from arthritis, this represents 5.8% of the total number of dogs in the survey.

Condition	**Number of dogs**
Arthritis	69
Chronic problems post amputation	1
Elbow dysplasia	10
Hip dysplasia	6
Other	7

It would be expected to have a reasonable incidence of arthritis in a sample where 20% of the dogs are over 10 years of age due to simple wear and tear. More worrying are the diseases that have a multifactorial aetiology including hereditary factors as these often affect young dogs and can lead to a lifetime of problems for both the dog and the owner. These include hip dysplasia and elbow dysplasia. In the present survey, hip dysplasia was given as a chronic disease in 6 dogs (0.5%) however it could be a factor in some of the cases of osteoarthritis. Assured Breeders in the UK have a mandatory requirement to hip score their dogs before

breeding. It is recommended that hip scores should be looked at along with other criteria and ideally the dogs chosen to breed from should have a hip score around or ideally below the breed median score which for the Bearded Collie is currently 9 (BVA/Kennel Club, 2019). The Kennel Club also now publish estimated breeding values (EBV) for hips in the Bearded Collie and the more complete this data becomes the more useful it will be as an additional tool to aid breeders in choosing dogs from which to breed. There is less data on elbow disease as elbow scoring is not mandatory in the breed although there are breeders starting to elbow score for their own information and there are dogs that are showing evidence of the disease. The recommendation is that ideally dogs with a score of 0 should be bred from and certainly not dogs with a score of 2 or 3 (BVA/Kennel Club, 2018) In the current survey there were 10 dogs with a specific diagnosis of elbow dysplasia mentioned as a chronic disease which represents 0.8% of the population, this compares to 1.1% in 2018, 0.9% in 2019 and 1.2% in 2020 but will be monitored on an ongoing basis. The fact that there are now more dogs with elbow dysplasia than hip dysplasia in this survey does lend weight to the argument for elbow scoring for the future health of the breed.

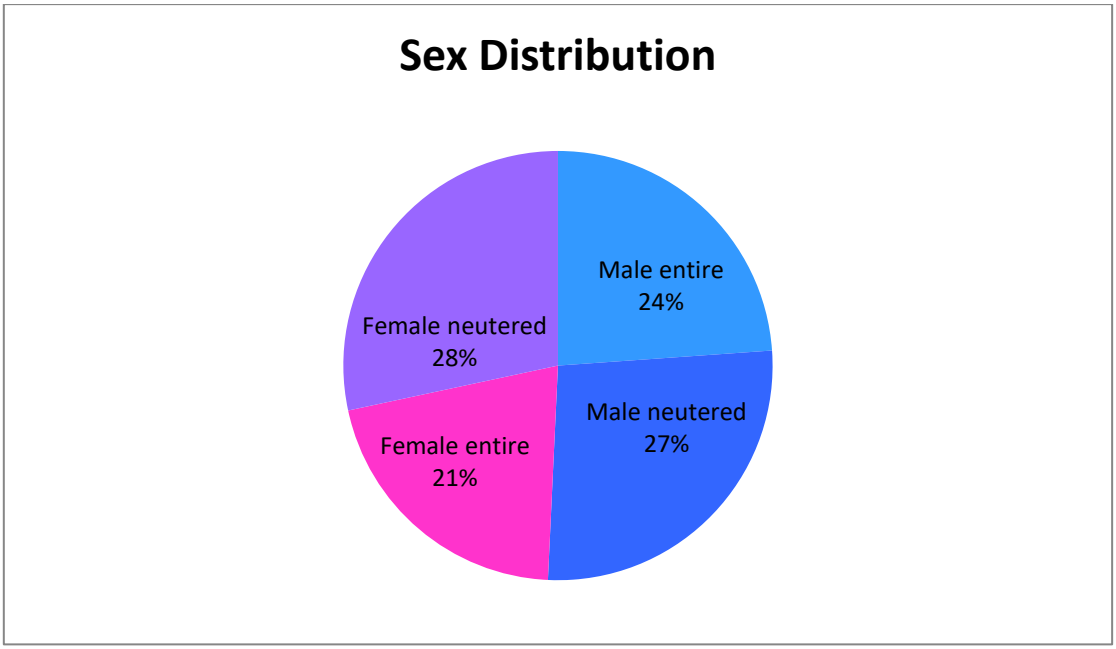
Immune mediated disease

As mentioned previously immune mediated diseases have always been of concern in the breed and in the current survey Symmetrical lupus onychodystrophy (SLO) is the second most common chronic condition. In the current survey the total number of instances of immune mediated disease in the long-term health problems was 67 which represents 20% or one in five of all long-term health problems mentioned. Breakdown of immune mediated disease is as follows:

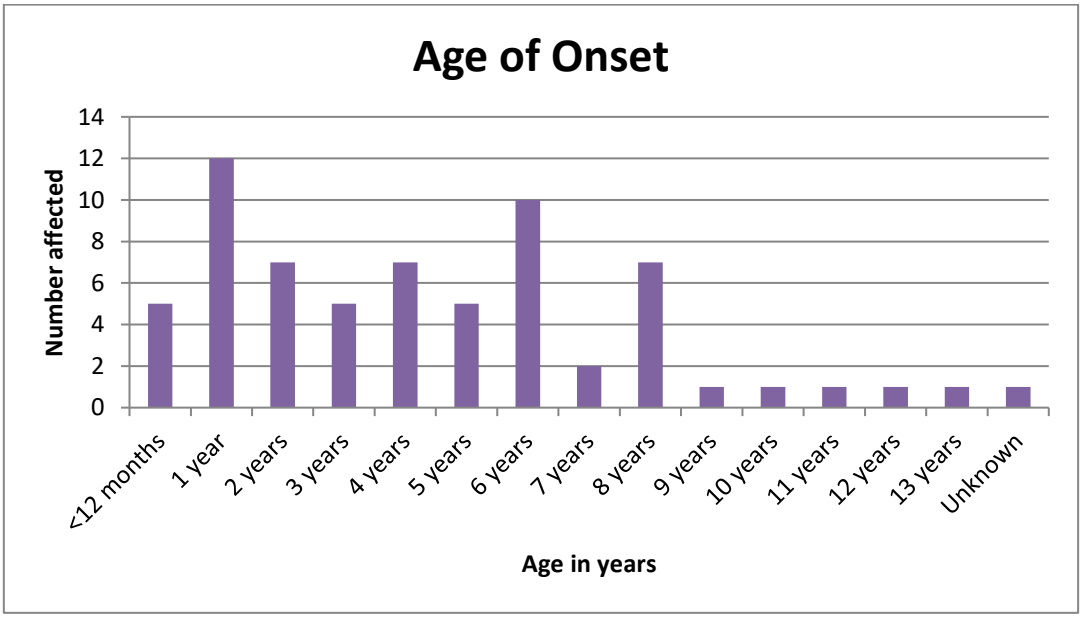
Disease	Number of cases
Addison's	17
AI unspecified	7
Anal furunculosis	1
Immune mediated polyarthritis (IMPA)	1
Immune mediated thrombocytopaenia (IMTP)	1
Systemic lupus erythematosus (SLE)	1
SLO	30
Steroid responsive meningitis-arteritis (SRMA)	1
Thyroid disease	8
Total	67

Within the survey the total number of dogs affected with one or more immune mediated diseases was 67 which represents 5.6% of the total dogs in the survey, this compares with a total of 68 (5.3%) in 2020, 57 (4.9%) in 2019 and 61 (5.4%) in 2018. This number is generally less than has been reported in other surveys (Kershaw, Wilkins and Mc Bride, 2015, and Kennel Club, 2014) but may reflect that we had a large sample number and owners of healthy dogs were encouraged to enter data. The sex distribution of these dogs was 50.7% male and 49.3% female with a breakdown as follows:

Sex of dog	Number affected
Male entire	16
Male neutered	18
Female entire	14
Female neutered	19



Age of onset of immune mediated disease for these dogs was as follows:



Age of onset is positively skewed showing more young dogs diagnosed which is the reason for concern with these diseases, along with their life threatening nature, the need for ongoing treatment in most cases and the unclear mode of inheritance and their likely multifactorial aetiology. Female neutered dogs are still the category most likely to be affected. There have been advances in the understanding of autoimmune disease in 2019 with research into SLO

and Addison's disease from Liza Gershony at the University of California and research funded by the JBLC into Addison's disease by Brian Catchpole at the Royal Veterinary College. Both have advanced our knowledge of these diseases but they are multifactorial diseases and we do not at present have any commercial tests available to identify genetically susceptible animals.

Dogs on long term medication

172 dogs (14.5%) were reported to be on long term medication with one or more drug. Data was not collected in this survey on the drugs used.

Jaw problems

As part of the BHCP information was collected on dogs which had jaw problems, 39 dogs (3.3%) were reported as having problems with their jaw compared with 4% in 2020 and 3.9% in 2019. The breakdown of these problems was as follows:

Problem	Number of dogs affected
Level bite	4
Narrow jaw	7
Other	3
Overshot	13
Teeth impacting palate	5
Teeth misplaced	2
Undershot	7
Wry jaw	2

Some dogs had multiple problems such as narrow jaw and teeth impacting the palate. There is often a genetic component to malocclusions but trauma can be another occasional cause. The only ways of dealing with this at present are not to breed from parents with jaw problems and not to repeat matings which have produced jaw problems. Of the 39 affected dogs 14 (35.8%) required veterinary attention to resolve the situation, the rest either resolved without intervention or the dogs were able to live with the condition.

Inherited diseases

There are potentially many diseases which have a genetic component but Bearded Collie breeders are strongly advised to test for Hip dysplasia (HD), indeed it is mandatory for the Assured breeder Scheme (ABS) and breeders are also strongly advised to test for Collie eye anomaly (CEA) and have an eye examination to check for other potential hereditary eye diseases. As part of the BHCP we also agreed to monitor the breed for elbow dysplasia (ED). The prevalence of these diseases was as follows when owners were asked the direct question of whether their dog suffered from them:

Disease	Numbers of dogs affected		
	2021	2020	2019
Hip dysplasia	20 (1.7%)	16 (1%)	24 (2.1%)
Elbow dysplasia	41 (3.4%)	24 (2%)	24 (2.1%)
CEA	3 (0.3%)	4 (0.3%)	9 (0.8%)

HD and ED are multifactorial diseases which although they have a genetic component can be affected by other factors. The Bearded Collie was one of the early breeds to embrace the British Veterinary Association (BVA) / Kennel Club (KC) Hip Dysplasia Scheme. In the last 15 years 1397 Bearded Collies have been screened (KC). The BVA/KC scheme for elbow dysplasia was introduced later and is not a requirement for the breed at present but some breeders have started screening dogs when their hips are done and this, and clinical disease found have indicated presence of the disease in the breed. This is being monitored and this is the third survey where we have asked owners directly if dogs were affected and there has been an increase from 2% affected to 3.4% affected from 2020 to 2021, all of this lends weight to the argument to screen breeding stock. It will now be monitored annually and discussed as part of the BHCP with the KC. The 3 dogs with CEA are puzzling as there was only ever one reported case of CEA in the breed in the UK but could indicate carriers of CEA or possibly non-KC registered Bearded Collies or foreign dogs although we asked only UK KC registered dogs to complete the survey.

Screening of dams of dogs in the 2019, 2020 and 2021 surveys were as follows:

Screening test carried out	2021 Numbers tested	2020	2019
Hip dysplasia	833 (70%)	935 (74%)	835 (72.6%)
Elbow dysplasia	355 (29.8%)	291 (23%)	181 (15.7%)
CEA	461 (38.8%)	458 (36%)	309 (26.9%)
BVA eye examination	304 (25.6%)	343 (27%)	259 (22.5%)
No tests	50 (4.2%)	26 (2%)	25 (2.1%)
Unknown	298 (25%)	298 (23%)	277 (24.1%)

Screening of sires of dogs in the 2019 and 2020 surveys were as follows:

Screening test carried out	2021 Numbers tested	2020	2019
Hip dysplasia	743 (62.5%)	860 (68%)	760 (66%)
Elbow dysplasia	345 (29%)	282 (22%)	175 (15.2%)
CEA	428 (36%)	426 (34%)	298 (25.9%)
BVA eye examination	265 (22.3%)	386 (30%)	213 (18.5%)
No tests	36 (3%)	17 (1%)	18 (1.6%)
Unknown	401 (33.7%)	386 (30%)	365 (31.7%)

Unknown health tests may be because the dog is a rescue and they are unknown or could be because the dog is older and the owner is unaware of the tests done or could simply be

because they cannot find this information. There is now no excuse for dogs being born without parents having hip scores given the Kennel Club's recommendation and the current survey sadly shows an increase in this. CEA tests have only been required in recent years so the older dogs in the survey will not have parents CEA tested but this figure should gradually increase in ongoing surveys. It should be noted that the Kennel Club announced that they are restricting the hereditary clear status for genetic tests to two generations from January 2022 meaning that after two generations breeding animals will need to be retested to avoid any errors in hereditary status due to either errors in the test or errors in recording parentage. This will affect CEA testing for Bearded Collies. Eye examination in veteran dogs is useful to monitor the breed for any emerging diseases such as reports of dogs abroad with progressive retinal atrophy (PRA). Many breeders have carried out eye tests from the early days of the BVA/KC scheme and I have had sight of documentation of dogs tested from the 1970s. Elbow testing although not required shows the dedication of some breeders to be proactive in ensuring they breed healthy puppies. The situation with elbow dysplasia will be monitored and if the prevalence increases there will have to be consideration of changing the recommendation to mandatory testing for ABS breeders and strongly recommending testing for other breeders. In light of the increase in dogs with elbow dysplasia in this survey it is encouraging to see that breeders are choosing voluntarily to test dogs to try and prevent what is a disease with lifelong consequences.

Summary

This is the fourth attempt to collect data on an ongoing basis by yearly health surveys in the breed. The general feedback was the survey was easy and quick to complete. The ease with which the survey could be completed did mean there was a compromise in the amount of data collected. However, there was a good response with data on 1189 dogs. This showed that although the breed has some health problems in line with many other pure-bred dogs Bearded Collies were in general a long-lived breed and many of the diseases seen were associated with age. This should not lead to complacency though as dwindling registration numbers leads to a reduction in the number of dogs available for breeding and the danger of loss of genetic diversity especially if many dogs are bred to popular sires. We also still have the problem that we do not know how to prevent the breeding of dogs with immune mediated disease and all we can do at present is not to breed from any dogs exhibiting these diseases, not repeat matings that have produced offspring with these diseases and continue to try and increase genetic diversity and reduce the coefficient of inbreeding of puppies produced. The Joint Breed Liaison Committee and the Breed Clubs are also committed to looking for opportunities to help further research in these areas and have recently funded further research into Addison's disease carried out by Brian Catchpole at the Royal Veterinary College. There is also ongoing research both into Addison's disease and SLO at the University of California and anyone who wishes to partake can do so by looking at the information on the website related to the Bearded Collie project. (Bearded Collie Project: Addison's and SLO – CGAP Canine Genetic Analysis Project (ucdavis.edu)) At the end of the survey I did ask an extra question

about any particular areas in which people wanted more information and I will address this by looking at the most asked about areas in the future.

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