BeaCon Open Health Registry Report
April 2020

Contents

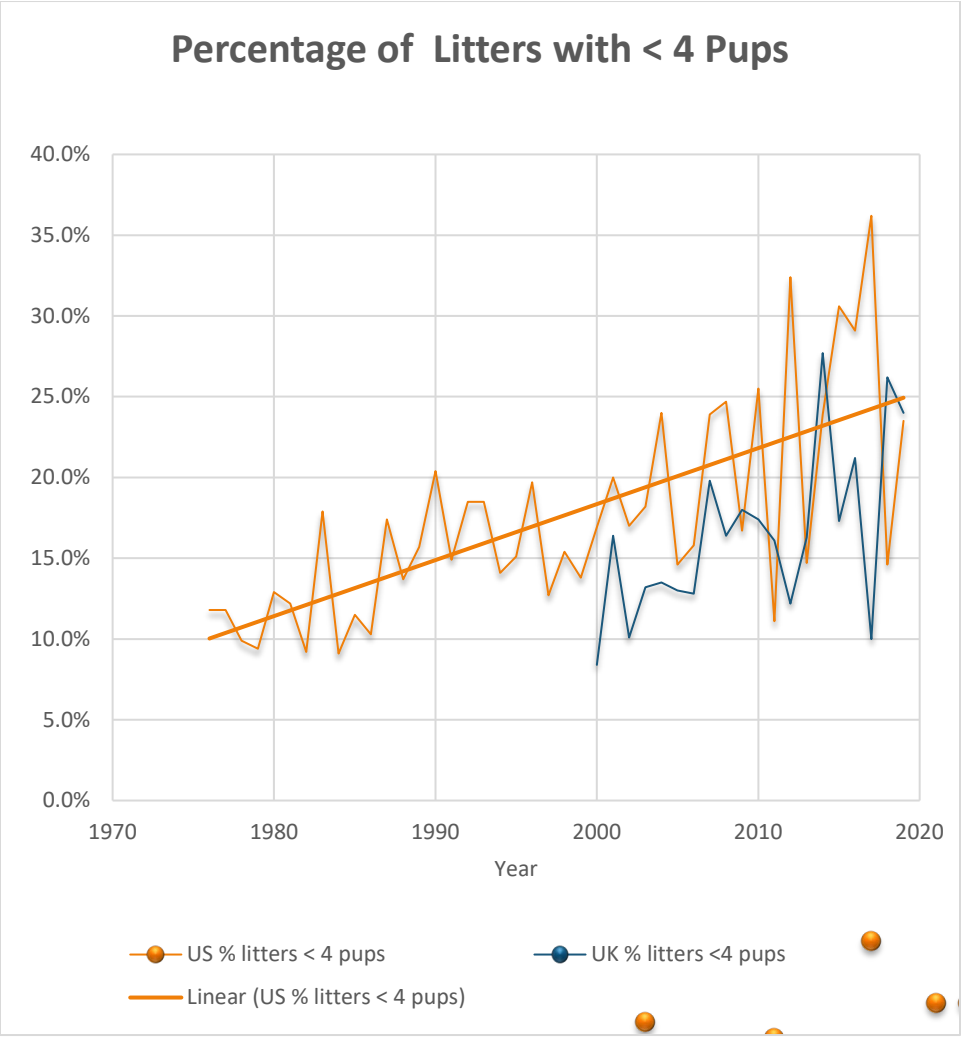
General Population Statistics

The registration numbers in the table below are based on year of whelp. A new column this year shows the % litters with fewer than 4 pups per litter (USA only); those data are graphically displayed in a figure following the table. The 2019 information is incomplete as some will be registered in 2020.

	USA - AKC					UK - KC			
	# Dogs Registered	# Litters	# Pups in Litters	Av # pups/ Litter	% Litters with < 4 pups per litter	# Dogs Registered	# Litters	av# pups per litter	% Litters with <4 pups per litter
2019	138	34	181	5.3	23.5%	303	54	5.6	24.0%
2018	201	41	228	5.6	14.6%	274	44	6.5	26.2%
2017	208	47	225	4.8	36.2%	420	65	6.1	10%
2016	224	55	284	5.2	29.1%	284	51	5.3	21.2%
2015	247	49	251	5.1	30.6%	346	53	6.3	17.3%
2014	289	71	381	5.4	23.9%	371	64	5.6	27.7%
2013	319	68	391	5.8	14.7%	543	91	6.0	16.3%
2012	269	74	377	5.1	32.4%	463	78	5.9	12.2%
2011	345	72	447	6.2	11.1%	538	93	5.8	16.1%
2010	321	82	442	5.4	25.5%	572	95	6.0	17.4%
2009	331	78	445	5.7	16.7%	528	90	5.9	18%
2008	393	81	419	5.2	24.7%	643	113	5.7	16.4%
2007	413	113	609	5.4	23.9%	606	98	6.2	19.8%
2006	447	101	596	5.9	15.8%	720	119	6.1	12.8%
2005	485	110	664	6.0	14.6%	650	113	5.8	13%
2004	562	150	842	5.6	24.0%	821	129	6.4	13.5%
2003	543	154	897	5.8	18.2%	668	109	6.2	13.2%
2002	587	159	943	5.9	17.0%	901	140	6.4	10.1%
2001	620	165	953	5.8	20.0%	721	121	6.0	16.4%
2000	682	183	1031	5.6	16.9%	952	150	6.4	8.4%
1999	614	196	1202	6.1	13.8%	1034	175	5.9	
1998	752	175	1080	6.2	15.4%	1119	179	6.3	
1997	711	197	1249	6.3	12.7%	1286			
1996	720	178	1031	5.8	19.7%	1318			
1995	762	186	1105	5.9	15.1%	1467			
1994	640	177	1057	6.0	14.1%	1337			
1993	749	157	912	5.8	18.5%	1506			
1992	766	162	1092	6.7	18.5%	1575			
1991	796	201	1162	5.8	14.9%	1621			
1990	700	181	1062	5.9	20.4%	1715			
1989	713	185	1128	6.1	15.7%	1945			
1988	817	190	1175	6.2	13.7%				
1987	760	184	1098	6.0	17.4%				
1986	797	185	1175	6.4	10.3%				
1985	858	191	1253	6.6	11.5%				
1984	858	209	1330	6.4	9.1 %				
1983	895	201	1190	5.9	17.9%				
1982	763	196	1257	6.4	9.2%				
1981	723	172	1095	6.4	12.2%				
1980	653	155	909	5.9	12.9%				
1979	588	127	782	6.2	9.4%				
1978	472	111	684	6.2	9.9%				
1977	446	85	496	5.8	11.8%				
1976		34	202	5.9	11.8%				

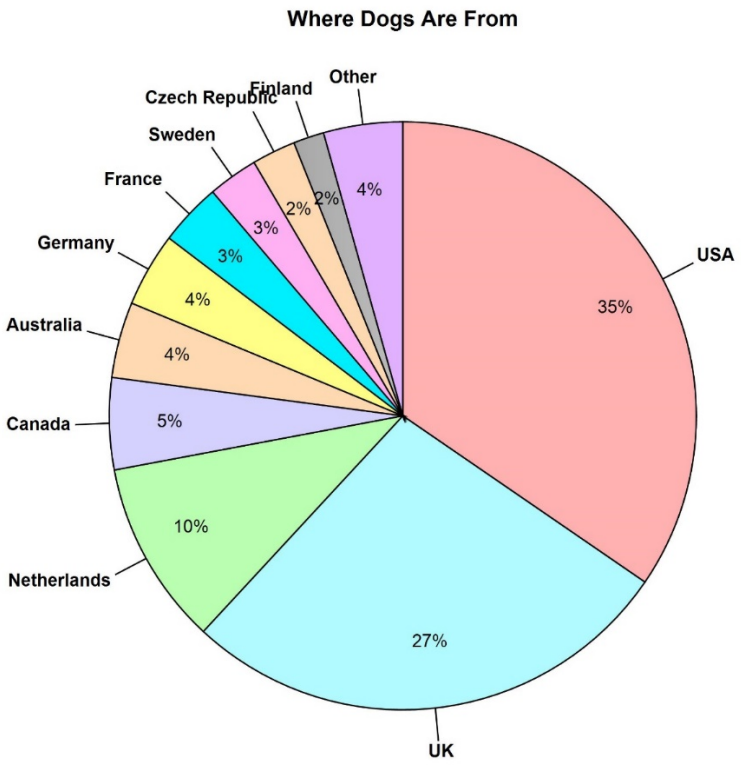
Changing Proportion of Small Litters

These data were also assessed on the basis of whelp year; for US dogs the years included 1976-2019 and for UK dogs the years included 2000-2019. Over time there has been an increase in the percentage of litters with fewer than 4 pups (see US trend line in the graph) and the change is statistically significant. Possible reasons for the change range from loss of hybrid vigor (less genetic diversity), basic reproductive problems of mates (e.g., poor semen quality), difficulty assessing optimal time to mate, mothering ability, change in breeding method or some combination thereof.



Demographics

- Number dogs – 3191 (119 new dogs this period)
- Non-public section of open health registry (not available to search or report) – 271 (8.5%)
- Number owners – 926
- Sex
    - Male – 1387 (36.4% neutered)
    - Female – 1804 (45.6% spayed)
- Living dogs updated in last 6 years stats
    - Number - 807
    - Average age, 8.9 yrs; range 0.25-16.9 yrs, standard deviation 4.1 years.
- Geographic location



New Dogs In Each Time Period

Year	# Owners	# Dogs	Dogs added	Months Included
19	926	3191	119	Mar 19-Mar 20
18	-	3072	57	Mar 18-Mar 19
17	894	3015	83	Mar 17-Mar 18
16	884	2932	210	Mar 16 – Mar 17
15	848	2722	271	Mar 15 – Mar 16
14	804	2451	139	Mar 14 – Mar 15

13	779	2312	130	Mar 13 – Feb 14
12	755	2182	129	Mar 12 – Feb 13
11	729	2053	307	Mar 11 – Feb 12
10	646	1746	176	Mar 10 – Feb 11
9	606	1570	144	Mar 09 – Mar 10
8	560	1426	223	Mar 08 – Mar 09
7	491	1203	242	Mar 07 – Mar 08
6	410	961	153	Feb 06 – Feb 07
5	357	808	130	Dec 05 – Jan 06
4	315	678	85	Dec 04 – Nov 05
3	278	593	183	Dec 02 – Nov 03
2	205	410	107	Sept 01 – Nov 02
1	169	303	-	July 00 – Aug 01

Categories of Health Problem

Major health problems fit into five categories.

Group	# cases	# dogs	% of all dogs (n=3191)
Autoimmune*	426	355	11.1%
Behavioral	340	284	8.9%
Endocrine	314	280	8.8%
Cancer	292	270	8.5%
Immunoglobulin mediated*	158	127	4.2%

Diabetes mellitus and Addison's disease are in both the autoimmune and endocrine categories.
Inflammatory bowel disease is in both allergy and autoimmune groups.
*Immune-mediated diseases result from abnormal activity of the body's immune system which may over-react or start attacking the body. Autoimmue diseases are a subset of immune-mediated diseases. Certain of these diseases are known to be mediated by specific immunoglobulins (see the immunoglobulin section).

Autoimmune (AI) Diseases (11.1%)

Disease	***# dogs***	***% of all dogs***	***av age of diagnosis***
Symmetrical lupoid onychodystrophy (SLO)	120	3.6	3.8
Addison's disease (hypoadrenocorticism)	102	3.2	5.0
Inflammatory bowel disease (IBD)	38	1.2	4.5
Autoimmune hemolytic anemia (AIHA)	35	1.1	5.8
Immune mediated arthritis	25		5.7
Vaccination reaction	23		3.8
Systemic lupus erythematosus (SLE)	21		7.5
Autoimmune-mediated thrombocytopenia (AITP)	20		7.4
Discoid lupus erythematosus	10		
Pemphigus	9		
Demodectic mange	6		
Addison's atypical	4		

There were 6 cases of myositis , 5 cases each of keratoconjunctivitis sicca and diabetes mellitus, and 1 myasthenia gravis.

Some dogs had more than one AI problem which complicated management.

Sex Distribution of AI Disease

Disease	**Female Incidence**
Vaccination reaction	78.3%
AITP	70.0%
Immune mediated arthritis	68.0%
SLE	66.7%
AIHA	65.7%
Addison's	64.7%
IBD	47.4%
SLO	40.8%

Frequency of AI problems, Addison's and SLO Over Time
(numbers represent percentage of dogs with a disease divided by the total number of dogs in the registry that report year)

Report year ending Feb	AI diseases	Addison's disease	SLO
2006	12.4	6.3	2.1
2007	12.7	5.9	2.2
2009	12.0	4.6	2.7
2011	12.4	4.1	3.5
2013	11.6	3.7	3.5
2015	11.4	3.6	3.4
2017	11.6	3.4	3.6
2019	11.1	3.1	3.9
2020	11.1	3.2	3.6

The change in frequency of Addison's disease (lower now) and SLO (higher now) with time may represent real changes within this population or owner's decision to participate in the registry because of the then current research focus; it is impossible to differentiate the reason.

Behavioral, Temperament Issues (8.9%)

Issue	# dogs	% of all dogs
Fear*	275	8.6%
Aggression**	40	1.3%
Hyperactivity	13	
Obsessive compulsive disorder	12	

*loud sharp noises – 219; other – 34; everything – 8; stranger – 9; crowds - 4
**dog – 19; family – 12 (5 were euthanized at a young age); all – 6; stranger – 6. It is possible that some cases of dog aggression represent fear but histories are incomplete.

Fear of Loud Sound.
The fear of loud sounds has been recognized for many years. The cause(s) are not known though possibilities include inheritance, association with a sudden aversive event, or even medical causes. For example, an association exists between fear and hypothyroidism but doesn't necessarily mean cause; the fear is reduced in some dogs treated for hypothyroidism.

The average age of onset for loud sound fear was 2.5 in the 146 for whom age was given. 57.5% were female. A consideration in the older dog who newly develops this fear, could be musculoskeletal pain, as noted in this report.

Aggression.
Aggressive behavior has led to euthanasia of dogs from many breeds; sometimes it is the only choice. It is important to rule out medical problems that could be causing physical discomfort or pain, or hypothyroidism. Aggressive behavior can take many forms and families/individuals differ widely in the level of aggression they are prepared to tolerate/live with. Beardies are often willing to test owners and if a growl gets them out of doing something they don't want to do or gets them something they want they will likely try it again. Because they are intelligent and easily bored it is important that they have plenty of exercise both physical and mental, and their owners make clear the behavior expected of them.

If the aggression is determined to be behavioral, it is often possible to modify or manage the behavior so that dog and owner can live in harmony. In some cases psychoactive drugs will be helpful in ameliorating the aggression to the point where it is easier to reestablish appropriate behavior. In most cases the dog can then be weaned off the medication. Basket muzzles, gates etc., may also be useful during this time. The help of a skilled trainer and/or veterinarian specializing in behavior may be invaluable.

There is the occasional dog with aggression for whom there is no effective solution; those are euthanized out of safety concerns for the family and at a relatively young age. This condition has been given different names, including rage syndrome, idiopathic aggression, and episodic dyscontrol. In between the unpredictable and unprovoked episodes the dogs are normal behaviorally and interactively. Families are very distressed by the sequence of events and is likely equally difficult for the professionals who are consulted. Among breeds in which this

condition has been diagnosed are Cocker Spaniels, English Springer Spaniels, and Belgian Malinois.

Endocrine Problems (8.8%)

Disease	# (%) of All Dogs	Average Age at Diagnosis (yr)
Hypothyroid	169 (5.3%)	7.5
Addison's disease	102 (3.2%)	5.0
Cushing's disease	38 (1.2%)	9.6*
Diabetes mellitus	5	
Insulinoma	2	

*there are cases with diagnosis before seven years of age; the range of diagnosis age is 3.4 to 15.3 years.

There were no cases of hypo- or hyperparathyroidism

Hypothyroidism has a wide range of ages at diagnosis (from 8 months to 15 years). While it is commonly stated that hypothyroidism is usually detected in dogs age 4-7, this is the age at which the more traditional symptoms of hypothyroidism usually become apparent; behavioral and more subtle signs appear in younger dogs. In general, dogs up to age 7 primarily have thyroiditis past that age hypothyroidism increasingly becomes attributable to biological aging of the thyroid gland. **It is important to understand that hypothyroidism is present from an endocrine perspective of decreased thyroid gland function long before the clinical signs appear.** Both factors were the rationale for the BCCA CHIC recommendation for a thyroid panel yearly until age 5 and then every two years. See health screening section for OFA information on thyroid testing.

Cancer (8.5%)

Location	#	Av Age of Diagnosis (yr)
Liver	32	12.1
Mammary	29	11.0
Spleen	22	10.9
Abdominal	19	11.8
Nasal	17	11.2
Hemangiosarcoma	22	11.8
Stomach	12	11.3
Bone	11	11.1
Testicular	10	12.1
Kidney	6	11.5
Other	111	

Cancer is a later onset disease based on average age of diagnosis. The "other" cancers can be studied by using the search or report function. Lymphoma – 2; spinal cord – 1; lung – 5; mast cell – 3; fibrosarcoma – 3; spindle cell sarcoma – 3; throat – 2; thyroid -2

Because of the low necropsy rate or lack of biopsy for diagnosis, the prevalence of cancer and location remains indeterminate. For example, the liver, spleen, or abdominal cancers could be primary hemangiosarcoma with metastatic spread.

Immunoglobulin Mediated Disorders (4.2%)

Allergy generally and flea bite allergy specifically, are mediated by immunoglobulin E (Ig E) whereas, food sensitivity and intolerance is mediated by immunoglobulins A and M (IgA and IgM). Inflammatory bowel disease is related to food sensitivity or intolerance.

Disease	# (%) of All Dogs	Av age onset (yr)
Dietary allergy/food intolerance	50 (1.6%)	4.0
Inflammatory bowel disease (IBD)	38 (1.1%)	4.5
Atopy	33 (1.0%)	3.3
Flea bite allergy	30 (0.9%)	4.0
Exocrine pancreatic insufficiency	7	

Other Diseases or Problems

Problem	# Dogs	% All Dogs
Arthritis (note 1)	99	3.1
Umbilical hernia	72	2.3
Hip dysplasia	70	2.3
Pyometra	54	1.6
Urinary infection	52	1.6
Eye, other	50	1.6
Cataract (note 5)	45	1.4
Depigmentation	45	1.4
Hearing loss (note 2)	42	1.3
Vestibular disease	38	1.2
Kidney failure, cause unknown (note 3)	38	1.2
Nail problems, other	29	
Cryptorchid	27	
Teeth, overshot	23	
Cognitive dysfunction	20	
Hot spots	20	
Stroke	20	
Epilepsy, idiopathic (note 4)	19	
Chronic pancreatitis	16	
Elbow dysplasia	16	
Exercise induced hyperthermia	16	
Bladder stones	16	
Neurological, other	16	
Teeth, base narrow	13	
Osteochondrosis dessicans	8	
Exocrine pancreatic insufficiency	7	
Degenerative disk disease	6	

- Note 1: Arthritis. Average age of onset over 8 years is 11.8 yrs (n=71).
- Note 2: Hearing loss. Average age of onset in 37 dogs aged 10 and older was 12.5 years. Two dogs had early onset. One with onset age 5 yr 3 mo and was almost completely deaf by age 7 yr.; she had two deaf littermates, so the cause was considered genetic. The other was born deaf; family history is not known.
- Note 3: Kidney failure of unknown cause. Average age of onset in 25 dogs age 9 and higher was 12.7 yrs. What was done to diagnose a specific was not listed in most and this is of concern for the younger 10 dogs because Addison's disease can present as kidney failure. Of these younger dogs, 1 had a biopsy dx of chronic interstitial nephritis, 1 had brothers who died early and dam who died of SLE; 1 was diagnosed with Addison's at the same time as kidney failure; several died at a later age of other causes
- Note 4: There is insufficient information given about how the diagnosis was made; at best this is an uncertain diagnosis.
- Note 5. Av age for those 9 and older was 12.5 yrs. There were 18 below 9 years of age having cataracts diagnosed; 4 of those were specified as "juvenile".

Health Screening Tests

Screening Test	# Tests	# Dogs	% Dogs Having Test
Hips	1216	1175	36.8%
Eyes	860	631	19.8%
Thyroid	538	363	11.8%
Elbows	321	319	10.0%
CEA/CH	213	207	6.5%
MDR1	56	56	1.8%
Prelim hips	27	27	
DLA	29	29	
Von Willebrand's	20	20	
Canine multifocal retinopathy	10	10	
prcd PRA	25	25	
Hips and eyes		543	17.0%
Hips and elbow		313	9.8%
Hips and thyroid		270	8.5%
Hips, eyes, & thyroid		233	7.3%

Collie Eye Anomaly/Choroidal Hypoplasia (CEA/CH) was identified in a Bearded Collie in the UK in 2012. Subsequently many have been tested. Information from public databases is available on individual dogs in Irena Fransson's online database (http://www.bcpedigree.se/)

Results from PawPrints lab (# tested – 201), 11/19/2018

- 176 clear AA (87.6%)
- 25 carriers AB (12.4%). T***hese are not being reported to OFA which has only 44 normal CEA Beardies.***
- 0 at risk BB

Most Frequent Geographic Location of CEA Tested Registry Dogs (n=207)

- United Kingdom – 71
- Netherlands –36

- Germany – 33
- Australia – 14
- United States – 13
- Canada - 7
- Czech Republic - 5

Most Frequent Geographic Location of MDR1 Tested Dogs (n=56)
- Germany – 12
- Netherlands – 10
- United States – 10
- United Kingdom – 9

OFA Bearded Collie Health Screen Statistics

Hips (# evaluated – 5010)
- Excellent – 17.5%
- Dysplastic – 6.5%

Thyroid (# evaluated – 1028)
- AI thyroiditis – 1.0%
- Idiopathic hypothyroidism – 0.6%
- Equivocal – 10.6%
- Normal – 87.8%

Elbow (# evaluated - 893)
- Normal - 97.1%
- Dysplastic – 2.7%
  - Grade I – 2.0%
  - Grade II – 0.6%
  - Grade III – 0.1%

Collie Eye Anomaly (# reported - 49)
- Normal – 100%

Reproductive Outcome

Dogs (# bred – 232)

- Semen check was done on 92 dogs (39.7%).
- Ten dogs produced no litters; 5 were bred once and 5 were bred twice (though it is unknown if to same or different bitches. Of the 222 remaining dogs, their stats are below.

# times bred	# dogs bred	# litters produced	total # pups	% pups produced
1	75	74	498	9.6
2	47	80	483	9.3
3	30	88	524	10.1
4	17	62	349	6.7
5	14	60	351	6.8
6	10	48	184	3.6
7	5	50	194	3.7
8	9	64	379	7.3
9	6	44	268	5.2
10 or more	19	320	1960	37.8
TOTAL		**890**	**5190**	

- 15.3% (number = 34) of sires bred 8 or more times produced 50.3% of pups

- Later Health Problems in Dogs' Progeny

Problem	# dogs producing problem	# pups with problem
Cryptorchid	30	63
Addison's	14	25
SLO	15	21
Hypothyroid	9	10
SLE	2	2

Bitches (# bred - 520; litters produced – 852)

# times bred	# bitches bred	# litters produced	pups born		
			# born	# live born	# live @ 6 wk
1	164	164	1089	950	847
2	141	271	1730	1513	1344
3	83	233	1417	1138	1105
4	31	114	628	560	517
5	11	55	380	332	325
6	3	15	63	47	46
Total	**433**	**852**	**5307**	**4540**	**4184**

Average litter size was 6.3 pups.
Mortality at birth was 14.4%; there was an additional 8% mortality by 6 weeks of age.
Delivery was by C-section for 103 litters (12.1%).

Breeding Method

Method	# Bitches
Natural	620
A/I fresh	90
Natural and A/I fresh	31
A/I frozen	22
A/I chilled	25
A/I operative	26

Bitches' Progeny and Early Identifiable Issues

Issue	# Pups
Cryptorchid	131
Mismark	157
Umbilical hernia	128
Bad bite	26
Poor pigment	20
Cleft palate	3

Later Health Problems in Bitches' Progeny

Problem	# Bitches
Addison's	25
Symmetrical lupoid onychodystrophy	28
Systemic lupus erythematosus	4
Hypothyroid	14

Sharing of Health Information

Puppy owners, breeders (defined normally as owner(s) of a litter's dam), and stud dog owners all have a vital role sharing health information. When a party omits that responsibility it is to the detriment of future breeding programs and the breed's long term health prospects.

Mortality

General

There were 1246 deceased dogs or 39.1% of all registry dogs; information was available on 1125 to calculate age at death.

Deaths by age group

The average of death dogs was 12.2 years and the range was 1 mo – 18.9 yr

Age Group (yr)	#	% all deaths (# 1246)	% all dogs (# 3191)	Av COI
< 3	28	2.2	0.9	23.5
3-6	78	6.3	2.4	22.7
7-8*	72	5.8	2.3	23.0
9-11	206	16.5	6.5	24.1
12-13	310	27.6	9.7	23.9
>13	429	34.4	13.4	24.1

Necropsies

These were conducted in 59 deaths (4.7%). Necropsies can sometimes be helpful to identify the cause of death, even one limited to the organs thought to be involved.

Mode of Death

- Natural – 141
- Euthanasia – 921
- Accidental – 32
- Undocumented – the remainder

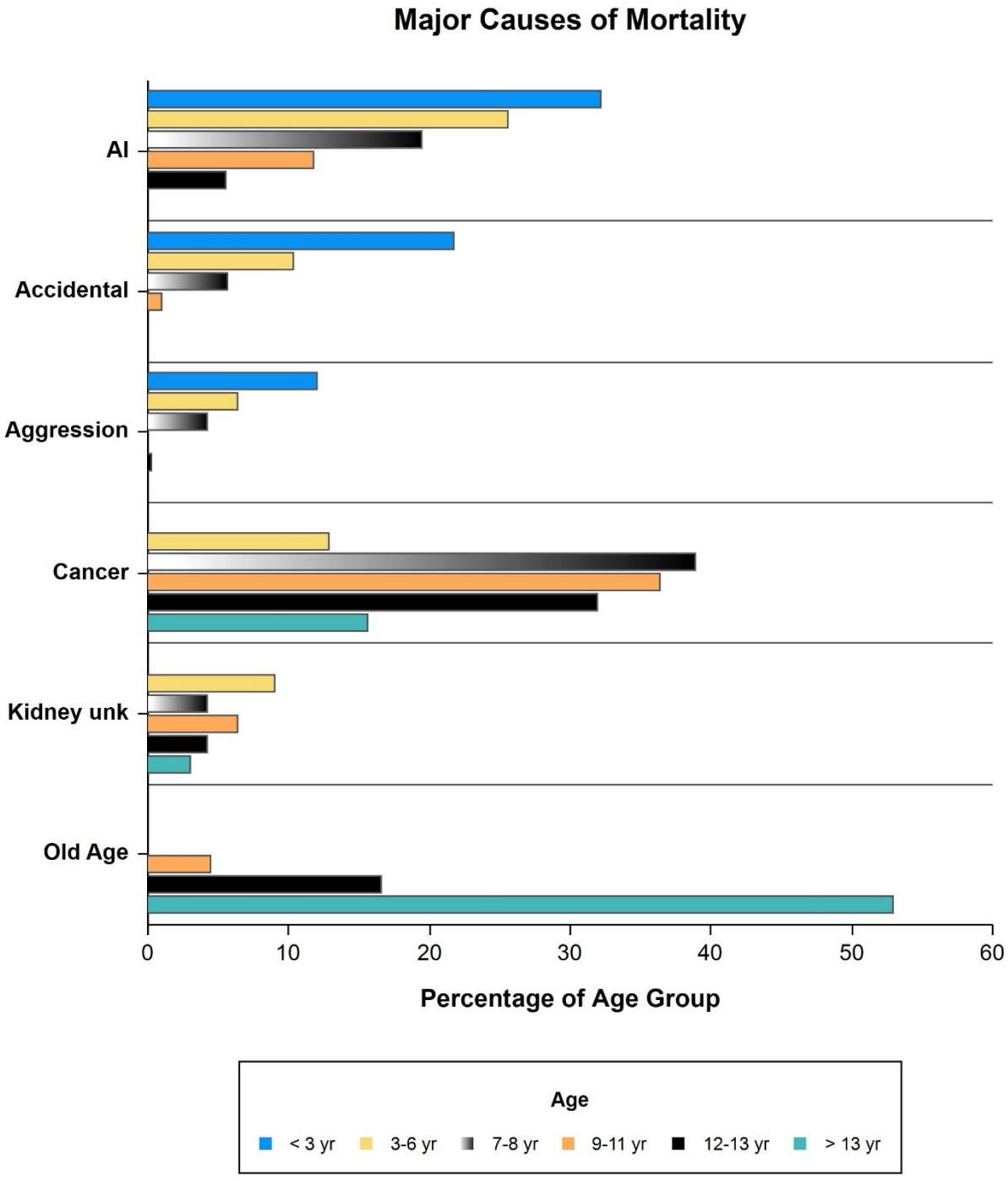
Major Causes of Death by Age Group

Disease or Problem	< 3 yr n = 28	3-6 yr n = 78	7-8 yr n=72	9-11 yr n=206	12-13 yr n=310	>13 yr n=429
Accidental	21.7%	10.3%	5.6%	1%	0.6%	-
Autoimmune	32.1%	25.6%	19.4%	11.7%	5.5%	-
Aggression	12%	6.4%	4.2%	-	0.3%	-
Cancer	-	12.8%	38.9%	36.4%	31.9%	15.6%
Kidney, unk cause	-	9.0%	4.2%	6.4%	4.2%	3%
Stroke	-	-	-	1.5%	5.2%	4.7%
Old Age	-	-	-	4.4%	16.5%	52.9%

Other causes by age group:

- < 3 yr: renal 3; 1 each – epilepsy, intussusception, myocarditis & cardiac arrest, meningitis, bleed into myocardium, pyometra, post op
- 3-6 yr: unknown 6; pancreatitis 2; 1 each liver failure, hepatitis, SARS, suspected poisoning; canine Crohn's disease, chronic interstitial nephritis, aspiration pneumonia;
- 7-8 yr: unknown 5; pyometra 2; 1 each idiopathic interstitial pneumonia, extreme pain with inability to walk, pet food poisoning, post-op ai surgical breeding, sudden complete paralysis of back legs, hepatocutaneous syndrome, aneurysm rupture, anaplasmosis, heart failure, breathing problems during walk with death soon after
- 9-11 yr: cardiac (most congestive heart failure) 8; leptospirosis 2; many "other" diagnosis that don't fit together
- 12-13 yr: unknown 16; cardiac (most heart failure) 11; rear leg weakness and unable to walk 8; neuro, other 5; Cushing's 4; megaesophagus 2
- > 13 yr: unknown 11; arthritis (12); vestibular disease 7; seizures 5; heart failure 4; Cushing's disease 3; cognitive dysfunction 3; acute pancreatitis 2

There was no difference in average inbreeding coefficient of the different age groups.
The table data are displayed graphically in the figure on the next page for those preferring that visual modality.


Major Causes of Mortality
AI
Accidental
Aggression
Cancer
Kidney unk
Old Age
0
10
20
30
40
50
60
Percentage of Age Group
Age
< 3 yr
3-6 yr
7-8 yr
9-11 yr
12-13 yr
> 13 yr

Coefficient of Inbreeding (COI)

COI indicates the closeness of relationship in a pedigree. A higher number means more closely related; a lower number indicates less closely related. It is usually expressed as a percentage. The concept was developed by Sewall Wright (Coefficients of inbreeding and relationship. Am Nat. 56:330-8, 1922). The basic concept is that inbreeding exists when an ancestor appears on both sire's and dam's side of the pedigree.

The COI is calculated on 10 generations in Breeder's Assistant software**.** These COI values should only be compared with values obtained with other software programs if the calculation methodology and the number of generations used are identical.

Pedigree Display of COI. Starting with dogs added from early 2017 on, COI are displayed for the OHR dog and the two most recent generations of ancestors.

Data

The data for the USA 1977 foundation stock were calculated by using just one dog from each litter. The number of foundation stock on October 1, 1976 was 939 dogs. Analysis of USA stud book pedigree information through late 2016 is in Dr. Jerry Bell's report.

The OHR inbreeding coefficients are arranged by decreasing COI. All countries have a minimum COI of 6-14 except for the UK which is zero (in 20 dogs).

Year Report/Other	Coefficient of Inbreeding (10 gen)	
	# dogs	Av COI
USA stud book – birth years		
1960's	56	14.9
1970's	1411	19.8
1980's	1453	23.7
1990's	1203	24.0
2000's	684	22.3
2010's	228	17.3
Open Health Registry		
Year 19		
All dogs	3138	21.9
UK	850	23.3
USA	1085	22.8
Belgium	26	22.3
Canada	159	21.5
Czech Republic	76	21.3
Finland	54	21.2
France	108	21.1
Australia	133	20.2
Germany	120	19.9
Netherlands	322	18.3

Genetic Diversity of US Bearded Collies

This lay summary was written by CA Sharp of the Australian Shepherd Genetics and Health Institute.

Dr. Bell used the Bearded Collie AKC studbook pedigree data on 4911 dogs to perform a genetic diversity analysis of the breed in the US. He used that data to determine who the UK breed founders (pedigree unknown) and earliest ancestors were, who their descendants were and what impact they have had on the breed in the United States since AKC recognition in 1977. The founders and earliest ancestors represent the original genetic potential in the population. Breeder selection over time, both in the UK and the US, has favored lines of descent from some founders over those of others. A few founders have no living descendants and thus their contribution has been lost.

This is not necessarily a negative. The failure of those lines to persist probably arises from generations of breeders who found those descendants either had undesirable traits that they did not wish to perpetuate or those dogs were less desirable than other lines present at the time. However, the **breed's current decline in population size may lead to a significant loss of genetic diversity should it continue**.

The breed today has a slightly higher average coefficient of inbreeding (measure of relatedness of the sire and dam) than do other breeds. This is not unusual for small-population breeds with a relatively complete database of dogs from the founders on down and that are comparatively new to registration. Bell's analysis indicates that **the Bearded Collie presently has sufficient genetic diversity to remain viable IF the population recovers in size** – something that requires the recruitment of new generations of breeders as well as continued effort by established breeders.

Dr. Bell's complete report is available at this link

Conclusions

The predominant health issues continue to be autoimmune diseases (SLO and Addison's leading the list), behavioral and temperament issues, endocrine disorders, immune mediated problems, and cancer. Reproductive outcome and problems in progeny are similar to that of previous years. The distribution of diseases responsible for death at certain ages is as for previous years. Cancer deaths are more prevalent in dogs over 8 years of age. Deaths from autoimmune diseases occur across the age spectrum except for those over 13 years of age. The lack of necropsy and the large number of unknown causes of death gives uncertainty regarding causes of mortality.

The OHR needs as many Beardies as possible, living and dead, to be entered and updated regularly to increase its value as a predictor of emerging health issues, monitor existing ones, and be a useful tool for breeding healthy dogs in future generations.

BeaCon's Directors thank everyone who has contributed to the open health registry.

Postscript

This is year 19 for BeaCon's health registry report. The reader is referred to the year 12 report introduction for information about participation, use of the database, and pedigree information.

BeaCon's Registry should not be used as a definitive source for health screening test results. Readers are encouraged to search the OFA database for USA dogs, the BCX database for UK dogs, and a dog's owner.

With BeaCon's goal of including every Beardie possible we invite all dogs, health problems or none, and lines. Breeders are encouraged to enroll pups before they go to their new homes; this provides healthy young dogs for long term follow up.

Since participation in the registry is voluntary, there are a number of large holes in the data; this means that some lines are missing, some dogs in a line are not reported, some problems for an individual dog are not reported etc.

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Respectfully submitted, the Board of Directors for the Bearded Collie Foundation for Health (BeaCon)

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