

BeaCon Voluntary Open Health Registry
Year 5 General Report
February, 2006

What is New This Year.

BeaCon hired a software consultant to completely redo the look and access to our on-line voluntary open health registry for Bearded Collies. It became available in the summer of 2005 both for registry participants, as well as for anyone who wishes to study the database information. Availability of the new on-line program has been announced on Beardie Internet lists and by some breed associations or groups around the globe.

Data entry into the open registry is always free. The searches and reports are dynamic; that is they reflect all data in the database to the moment your request is made.

Anyone wishing to use the search or report functions of the on-line registry may do so for a month free of charge after they first register or have gone in to update information. After the free month, there is a nominal yearly charge to help support the hosting service. Registry participants pay \$10; non-participants pay \$25.

You may look at the program by going on-line (www.beaconforhealth.org/sqlweb) and registering.

A hard copy registry book has been offered at cost of printing and mailing the past four years. At present (March 2006) there are no plans to publish a hard copy book.

Basic Explanations

What is an Open Registry? Open means that the information is available to the public. In other words, the information is not held confidentially and anyone who wishes access may do so subscribing to the registry on-line.

What Dogs/Owners Fit in the Registry?

ALL BEARDED COLLIES of known parentage. Deceased or living. Healthy or with a health problem.

Why are All Dogs Important?

- All dogs are essential to get a complete picture of the extent of wellness or health problems.
- To allow calculation of disease incidence. There need to be enough dogs to calculate meaningful disease frequencies – e.g., if there are 44 dogs with Addison's in 678 dogs, the frequency of Addison's is 6.49% (44/678). If the total number of dogs is 1678 dogs, the frequency would be 2.62% (44/1678).
- To provide whole family information which breeders can use for relative-risk pedigree analysis in diseases that are autosomal recessive.
- To provide data for researchers.
- To allow prospective puppy buyers data on health of Bearded Collies enabling them to make more informed choices.

When To Update? Every year. Even if the dog has had no changes from previous reporting. You can also update

whenever there has been a change in your dog's health or new health screens done – at any time.

Participation. The table below shows the cumulative participation over the years.

Year	# Owners	# Dogs
1	169	303
2	205	410
3	278	593
4	315	678
5	376	808

Who Submits Information? Owners are the only ones who can submit health information with two exceptions. The first is that a co-owner may submit information if the primary owner (defined as the person with whom the dog lives) submits a signed consent in the first year the dog goes into the registry.

The second exception is that breeders can report if a sire or dam has produced a disease in offspring. This policy was started in year 3 because breeders are not always able to convince their puppy buyers to participate in the open registry. It is vital to know about certain health conditions in offspring. Specific diseases of interest are Addison's, symmetrical lupoid onychodystrophy, systemic lupus erythematosus, and hypothyroidism. Any disease can be noted in the "other" category; e.g., autoimmune hemolytic anemia or thrombocytopenia, or polyarthritis, or a heart condition. Dams producing a disease can have the number of cases and the litter (s) indicated. Sires producing a disease may have the number of cases indicated. The name of a dog with the specific disease produced cannot be listed.

Important. You might wonder if a sire or dam is reported to have produced offspring with a disease, if you can assume that offspring in the open health registry are the ones listed by a breeder or sire owner. No you can not. For dam offspring, you must locate the name of the litter's sire and then search the open registry for dogs with the sire and dam in question. For sire offspring, you must contact the sire's owner for additional information.

How information is submitted. This is done either by hard copy form or on-line. The latter was started in year 3 and has been going well.

Documentation. No changes have been made from previous years. Copies of health screening test results are requested. This is especially important for dogs from countries other than the USA. We attempt to validate the information for USA dogs through the on-line registry databases (OFA or CERF). When that is not possible, it is so noted in the dog's report.

Health screening tests that have not been submitted to another registry will be included in BeaCon's registry. Preferably, a copy of the documentation form is sent to BeaCon; e.g., a copy of the CERF ophthalmologists' exam. If nothing is sent, that is considered "no documentation"; those words will appear in the

registry record. If lab results without interpretation are submitted, this is noted in the record.

Updating Information. Reminders are sent each year to owners of all living dogs in the registry as of the most recent data entry.

Definition of Years.

- Year 1. July 2000 – Aug 2001
- Year 2. Sept 2001 – Nov 2002
- Year 3. Dec 2002 – Nov 2003
- Year 4. Dec 2004 – Nov 2004
- Year 5. Dec 2005 – Jan 2006

Pedigrees and Coefficient of Inbreeding (COI). Every effort is made to be accurate. Data for pedigrees come from many sources including pedigrees submitted by owners, the Kennel Club Breed System Bearded Collie database updates, and various online databases. With the advent of the on-line registry system, fewer pedigrees were submitted; thus the dependence on other sources. Pedigrees are generated with Breeder's Assistant, starting in Year 5. If an error is found in a pedigree, readers should notify E. Sell (beaconbb@bellsouth.net) with the correct information.

A COI is the mathematical definition that elucidates closeness of relationship in a pedigree. It is usually expressed as a percentage and it was developed by Sewall Wright (Coefficients of inbreeding and relationship. Am Nat. 56:330-8, 1922). Basic principles are that inbreeding only exists if the ancestor appears on both sire's and dam's side of the pedigree. If inbreeding is calculated to a certain dog then that to his sire and dam is ignored unless they also appear through other lines. Lines already counted once must not be counted twice.

This sounds complex. It is if you want to hand calculate COI's for more than a few generations. Willis' books (references) and various online sources describe how to do this. It isn't complex if one uses a pedigree software program with the built in calculation.

Use of Data and Caveats. Viewers of the open health registry data are responsible for interpretation and use of the information. The purpose of this registry is to give objective data on disease and wellness, not to draw conclusions about any particular line, sire, or dam.

The occasional case of a disease does not mean that it is inherited. We caution the reader that a sire or dam can not be assumed to be a carrier of an undesirable genetic trait simply

because that health problem is reported in a single progeny. Furthermore, some genetic diseases may be influenced by environmental factors, not yet defined.

Geneticists (see references) believe the following circumstances are indicative of heritability:

- Relatively frequent occurrence of the disease
- When mating a sire and dam several times results in the same health problem in more than one litter.
- When a dog or bitch mated with different mates results in the same health problem in several litters.

If several dogs from the same kennel are reported with the same problem, you cannot assume that the problem occurs with high frequency. You have to know the status of the other dogs from that kennel before making any assessment regarding prevalence.

Many hereditary problems, other than those transmitted by an autosomal dominant mode of inheritance, involve healthy parents, one or both of whom are carriers of the genes responsible.

Information that a particular dog or bitch has produced a problem is vital to any breeder. This is especially critical for novice breeders just establishing their programs because they are least likely to have a good network for finding and verifying such information.

BeaCon encourages breeders to enroll pups in BeaCon's Open Health Registry before they go to their new homes. Having a large number of healthy young dogs to follow over the long term is an optimal resource to determining frequency of diseases in any breed.

The inclusion of dogs in this registry is by the free choice of the owner/co-owner. Absence of dogs from this registry is also by the free choice of the owner/co-owner. Notice of the registry's availability is made through resources available to BeaCon: BeaCon's newsletter (Lighting the Way) and web site (www.beaconforhealth.org), and Bearded Collie internet lists.

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Report for Cumulative 5 Year Data

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Demographic Data for Complete Open Health Registry

Item	#	
Owners	357	
Australia	8	
Belgium	1	
Brazil	1	
Canada	24	
Denmark	1	
England	44	
France	2	
Germany	18	
New Zealand	3	
Northern Ireland	1	
Portugal	1	
Scotland	1	
South Africa	3	
Sweden	2	
USA	246	
Not indicated	1	
Dogs	807	
Dogs from USA	497	62% of all dogs
Dog sex (not given)		
male	350	43.4% of all dogs
intact	165	47.1% of male dogs
neutered	171	48.9% of male dogs
unknown repro	14	
female	457	56.6% of all dogs
intact	204	44.6% of female dogs
spayed	243	53.2% of female dogs
unknown repro	10	
Dogs without health problems	361	44.7% of all dogs

It is rewarding to see that Bearded owners in locations other than the USA are also interested in an open health registry. Conversely, it is astonishing that so few Bearded Collies from the USA participate, given that over 500 have been registered yearly with AKC in the last couple of years and an even higher number previous to that. Other countries with a high number of dogs in the open registry are: UK 149, Canada 43, Germany 43, and Australia 28. Germany's participation has increased significantly the past several years, going from 4 owners in year 3, to 9 owners in year 4, and now 15 owners in year 5. The number of German Beardies represented in the open registry also increased. Several factors may have contributed to this change in German participants. First, a strong advocate of open health registry participation is in a leadership position for the breed there. Second, the editor of a quarterly Bearded magazine (which is independent of the breed group) publishes articles related to BeaCon and information about the open health registry. It seems reasonable to speculate that similar support in other countries could also increase their numbers of Beardies in the open registry.

Health Problems. The fact that fewer than 50% of the dogs in the health registry are reported to be free of one or another health issue is not surprising. People’s tendency is to report a dog with a health problem rather than one who is completely healthy. This is a well recognized phenomenon by groups doing any type of healthy survey or registry. BeaCon is trying to alter this trend by encouraging the entry of puppies into the open registry before they go to their new homes. Those healthy pups would then be the hoped for future healthy dogs to follow over their lifetime.

For the first time, the frequency of specific health problems is listed if there are more than 20 cases of the problem. A caveat of the frequency figure is that it applies to this specific population of Bearded Collies. Therefore, it is unknown if the findings are applicable to the broad population of Beardies.

Health Problem	Number of Dogs	% of All Dogs
Fear, loud sharp noises	173	21.4%
Autoimmune diseases (see table below)	100	12.4%
Hypothyroidism*	69	8.6%
Umbilical hernia	54	6.7%
Cancer (all types)**	53	6.6%
Hip dysplasia	36	4.5%
Allergy, flea bite	23	2.9%
Atopy	23	2.9%
Dietary allergy/food intolerance	23	2.9%
Depigmentation***	21	2.6%
Fear, other	20	
Nail problems other than lupoid onychodystrophy	19	
Inflammatory bowel disease	17	
Vaccination reaction	12	
Hyperactivity	8	
Hot spots	7	
Exercise induced collapse or hyperthermia	5	
Demodectic mange	4	
Exocrine pancreatic insufficiency	4	
Diabetes mellitus	1	
Keratoconjunctivitis	1	

NOTE: There is a correction to number of cases for the year 4 report. There were 6 cases of hyperactivity, 10 cases of hot spot, and 10 cases of other fears. These were reported in error to have a higher incidence last year.

*The number of cases of hypothyroidism that are autoimmune in nature is unknown. Fortunately, the incidence of autoimmune thyroiditis in Bearded Collies appears to be low (2.7% of 187 tested in OFA Labs; 4.6% of 275 reported by Michican State University Lab). Unfortunately, very few Bearded Collies have been tested so far. This is a factor which breeders need to take more seriously since scientists believe that autoimmune thyroiditis is hereditary and since it is evident in the lab long before it would be clinically suspected. Autoimmune thyroiditis is diagnosed by elevated Thyroglobulin autoantibodies, or and/or T4 and/or T3 autoantibodies. Making the diagnosis is dependent on drawing blood at a time when the autoantibodies are elevated in response to the immune reaction. Once the disease is established, the autoantibody levels will frequently no longer be elevated. Thus, testing after autoimmune destruction of the thyroid will give no indication of the autoimmune response.

“The disease has variable onset, but tends to clinically manifest itself at 2 to 5 years of age. Dogs may be clinically normal for years, only to become hypothyroid at a later date. The marker for autoimmune thyroiditis, thyroglobulin autoantibody formation (and other autoantibodies), usually occurs prior to the occurrence of clinical signs. Therefore, periodic retesting is recommended. The majority of dogs that develop autoantibodies have them by 3 to 4 years of age. Development of autoantibodies at any time in the dog’s life is an indication that the dog, most likely, has the genetic form of the disease. Using today’s technology only a small fraction of false positive tests occur. As a result of the variable onset of the presence of autoantibodies, periodic testing will be necessary. Dogs that are negative at 1 year of age may become positive at 6 years of age. Dogs should be tested every year or two in order to be certain they have not developed the condition. Since the majority of affected dogs will have autoantibodies by 4 years of age, annual testing for the first 4 years is recommended. After that, testing every other year should suffice. Unfortunately, a negative at any one time will not guarantee that the dog will not develop thyroiditis.” (The information was taken in 2005 directly from the OFA web site on hypothyroidism).

** Cancer diagnosis was:

nasal in 8

liver in 7

mammary 4 4 (1 spayed age 3 yr, diagnosis age 10 yr; 1 spayed age 8 yr, diagnosis age 15 yr; 1 spayed age 6 yr 2 mo, diagnosis age 9 yr 8 mo; 1 spayed & diagnosis made at age 10 yr)

spleen 3

testicular, bone, pancreas, small intestine, stomach, spindle cell sarcoma, hemangiopericytoma 2 each

abdominal, kidney, combined liver/spleen, malignant fibrous histiocytoma, undifferentiated basal cell ca, fibrosarcoma, pheochromocytoma, lymphoma, throat, mycosis fungoides lower lip, and bronchial 1 each

*** Note: some cases of depigmentation can be autoimmune in nature (e.g., vitiligo, or associated with lupus or pemphigus). Since there are other causes of depigmentation, it was not placed into the table with autoimmune diseases.

Autoimmune Problems (# diseases = 114; # dogs having diseases = 100, or 12.4% of all dogs). This year, if there were more than 10 cases of a disease, the frequency of the disease is shown. Although the frequencies appear to be unduly high in this population of Bearded Collies (i.e., in the open health registry), it is not known if the figures are applicable to the general population of Bearded Collies world wide. That will remain unknown until a much larger number of dogs are in the open registry.

Disease	Number	% of All Dogs
Addison's disease (hypoadrenocorticism)	51	6.3%
Symmetrical lupoid onychodystrophy	17	2.1%
Autoimmune hemolytic anemia	12	1.5%
Systemic lupus erythematosus	11	1.4%
Rheumatoid arthritis*	7	
Pemphigus	4	
Idiopathic thrombocytopenia	4	
Discoid lupus erythematosus	4	
Myositis	1	

* There are 4 additional cases of suspected immune polyarthritis

dogs with more than one disease:

11 dogs had 2 A/I diseases

3 dogs had 3 A/I diseases

Addisonian dogs who were thyroid tested – 24 (22 with panels; other 2, method not specified)

14 normal

9 hypothyroid

1 unknown

Health Screening Tests

Screening Test Done	Number	% of All Dogs (n=807)
Hips	330	38%
Eyes	236	29%
Thyroid	182	23%
Hips and eyes	192	24%
Hips and elbows	53	6.6%
Hips and thyroid	116	14%
Hips, eyes, and thyroid	90	11%
Hips, eyes, elbows, and thyroid	20	2.5%

Reproductive Outcome. There are 75 male and 143 female Bearded Collies with recorded reproductive history.

Males. Among the males, only 33 (44%) had a semen check, and some reported findings were inexact enough to not be very helpful to a breeder. If you are interested in the ideal semen examination and report, please see BeaCon's newsletter, Lighting The Way, Fall 2005, p 4. The table shows outcome for the males.

Item	#	Av	Range
Bitches bred	71	3.9	1-19
Litters produced	69	3.6	0-18

The number of later developing problems produced in progeny of male Beardies was 6 for Addison's, 5 for Hypothyroidism, and n=4 for symmetrical lupoid onychodystrophy.

Females. 139 of the 143 females were successfully bred and they produced 291 litters. The breeding method was natural for 200 litters, A/I fresh for 15, A/I chilled for 18, A/I frozen for 5, A/I operative for 9, and not recorded for 42. Delivery was by Cesarean section in 18 litters (6.5% of all litters). The average number of litters was 2.1. The number of progeny born and congenital problems are given in the table below.

Male pups			
total born	270	3.6	0-9
live born	263	3.5	0-9
live @ 6 wks	255	3.3	0-9
cryptorchid	52		
mismatch	44		
umbilical hernia	28		
bad bite	12		
poor pigment	11		
cleft palate	3		
Female pups			
total born	270	3.2	0-8
live born	261	3.1	0-8
live @ 6 wks	257	2.9	0-7
mismatch	39		
umbilical hernia	34		
bad bite	11		
poor pigment	4		
cleft palate	2		

There were later developing problems reported. Ten dams produced 16 cases of Addison's, five produced 8 cases of symmetrical lupoid onychodystrophy, two produced 2 cases of systemic lupus erythematosus, six produced 8 cases of hypothyroidism. These numbers may be incomplete as the breeder may be unaware of the diagnoses.

Mortality. There are 161 (20%) dogs deceased. There may well be others also deceased by now, but their owners have not responded to requests for them to update information. Autopsies were conducted on 14 deceased dogs. Remember that autopsies will sometimes be helpful in establishing the cause of death.

Causes of death in different age groups are given below. The number with cause of death is fewer than the number of deceased because of lacking information on date or age of death.

Age Group	# Deaths	Causes of Death
0 – 2 yr 11 mo	5	2 accidental
		1 each intussception, aggression, and pemphigus
3 yr – 6 yr 11 mo	22	5 unknown
		3 accidental
		2 systemic lupus erythematosus
		1 each aggression, autoimmune hemolytic anemia, inflammatory bowel disease, immune thrombocytopenia, fulminating pancreatitis, suspected poisoning, chronic interstitial nephritis, respiratory failure, small intestine cancer, renal failure, visual, liver failure
7 yr – 8 yr 11 mo	12	3 unknown
		2 aggression (1 due to repeated episodes of symmetrical lupoid onychodystrophy)

		1 each accidental, liver cancer, vascular invasive abdominal mass, infection secondary to immune mediated polyarthritis, sudden onset of complete hind leg paralysis, small intestinal cancer, systemic lupus erythematosus
9 yr – 13 yr 11 mo	78	27 cancer (6 unspecified, 5 nasal, rest were single cases)
		12 unknown
		6 old age or stroke
		5 Addison's
		5 other autoimmune
		remainder assorted individual causes
14 yr and older	42	23 old age or stroke
		7 cancer
		5 unknown
		remainder assorted individual causes

Coefficient of Inbreeding (COI). The COI values were calculated using the Breeder's Assistant (BA). Pedigree Software. Previous values had been calculated with the Kennel Club Breed System (KCBS) and were slightly lower than the BA values. The software change was necessitated because the KCBS company no longer provides support.

Further information about COI's and their meaning can be found on the internet and also on BeaCon's web site in the section on open health registry data.

Av COI = 24.0, standard deviation \pm 5.7, minimum 0, maximum 42.8. Calculated for 800 dogs.