GLEN OF IMAAL TERRIER
HEALTH SURVEY REPORT (2014)

Monday 29th September – Friday 12th December 2014

379 completed surveys

GLEN OF IMAAL TERRIER HEALTH SURVEY 2014

REPORT

CONTENTS

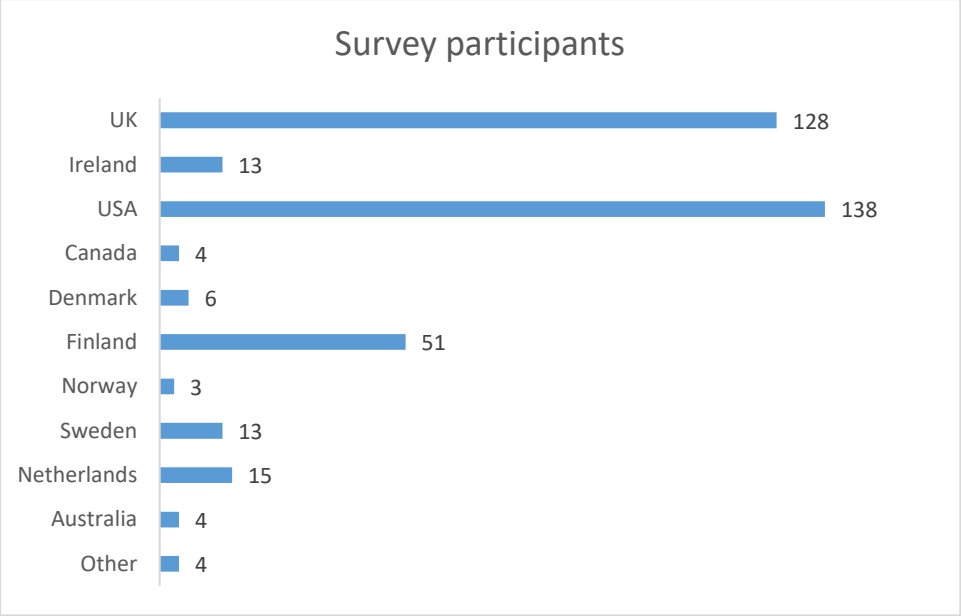
Introduction & summary

This report presents an overview of the demographics of the survey participants, numbers of Glens affected by different health conditions and fertility & mortality data. Links to other published Glen health surveys e.g. Finnish Breed Club Health Survey (2013)[1], ongoing OFA Health Survey (since 2012)[2] and the UK Kennel Club's Purebred Dog Health Survey (2004)[3] & Pedigree Breed Health Survey (2014)[4] are provided, for comparison.

N.B. The OFA Health Survey[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years.

The Glen of Imaal Terrier Health Survey was undertaken with the aim of establishing a baseline representation of the general health of the Glen of Imaal Terrier (the Glen). The objective was to collect health data from a minimum of 300 Glens, worldwide, over a three month period. With weekly updates and reminders via various Facebook groups and a UK breed club blog, the total number of participating Glens was 379 – from 13 countries in 3 continents.

The UK Kennel Club (KC) sent an email notification to 107 Glen owners, with a link to the survey. The email was sent to owners who had registered ownership of Glens born on or after 1st January 2000, and who had provided the KC with email contact details. Assuming a population of 760 – the number of Glens registered by the KC from 1st January 2000 to mid-September 2014 – the UK figure of 128 completed surveys represents a 17% response rate.



Health data was recorded for:

- 334 living Glens
- 45 deceased Glens

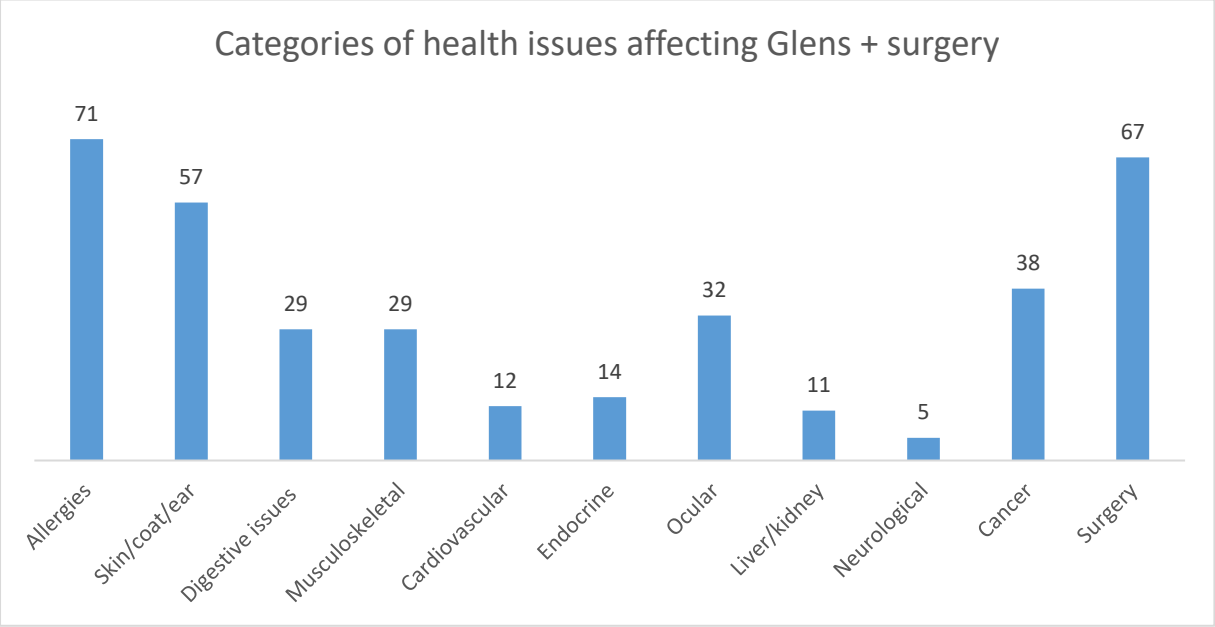
- 178 dogs: 111 entire & 67 neutered males
- 201 bitches: 108 entire & 93 spayed females

Introduction & summary

Health information was requested for the following categories:

- Allergies
- Skin/coat/ear
- Digestive
- Musculoskeletal
- Cardiovascular
- Endocrine
- Ocular
- Liver/kidney
- Neurological
- Cancer
- Surgery

Here is a summary of the numbers of Glens reporting symptoms / diagnoses in each of the categories:



- Surgery listed above and in the 'Surgery' section does not include neuter/spay or surgery for cancer
- Around half of the participating Glens were reported to have one or more health conditions and/or undergone surgery
- More detailed information on symptoms and diagnoses is provided in each section of the report

General data

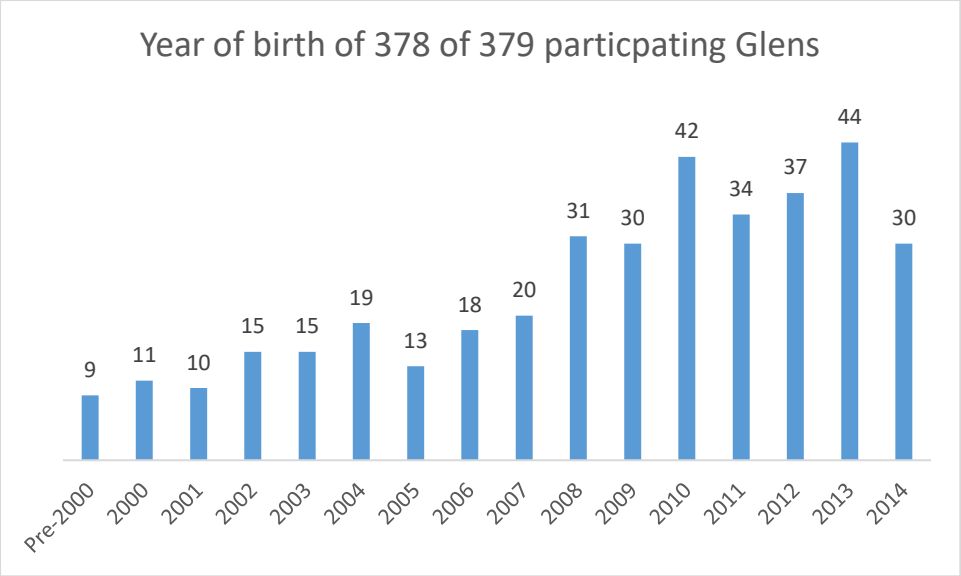
2.1 Sex

The sex distribution of participants was:

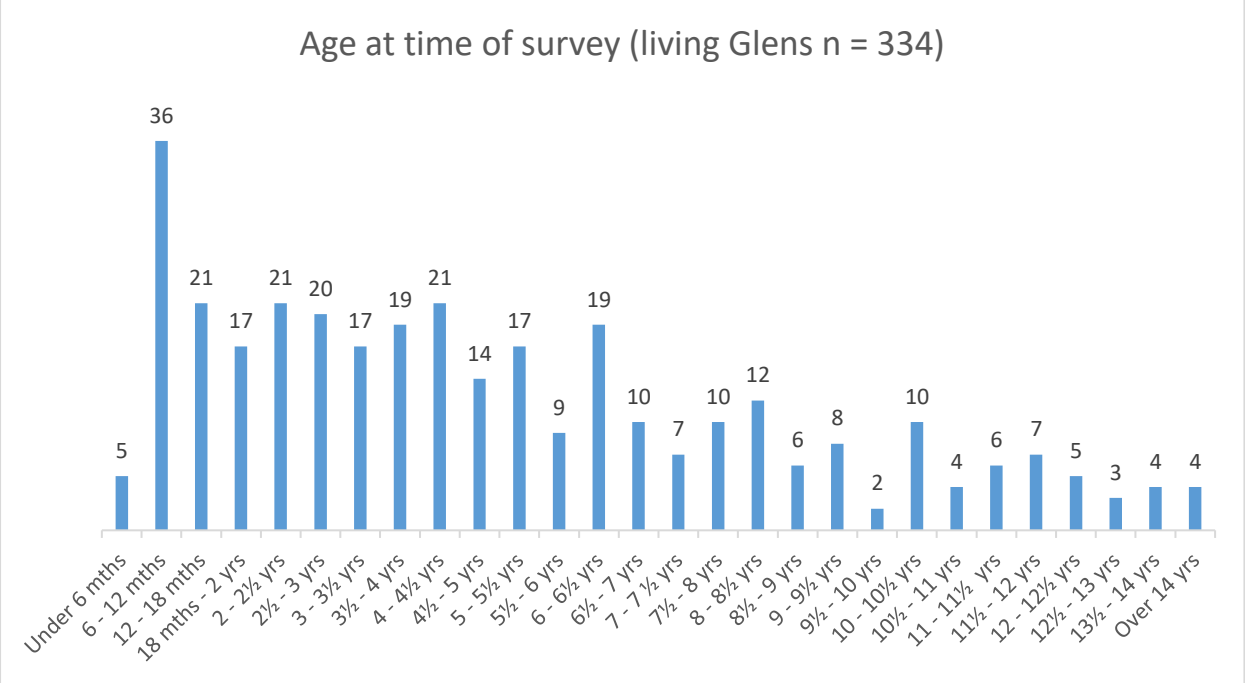
- 178 dogs (47%)
- 201 bitches (53%)

2.2 Age

Year of birth was provided for 378 of 379 Glens (including deceased Glens). There were 9 Glens born before 2000 and they were all included in the study – 1996 x 2; 1998 x 2; 1999 x 5.



The age distribution of the 334 living Glens in the survey:

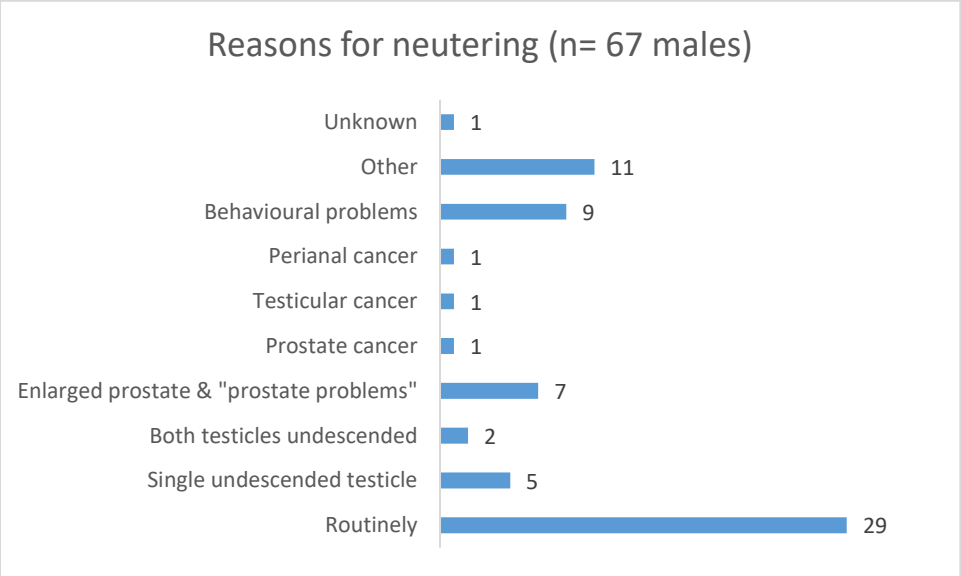


2.3 Entire / neutered (males)

Dogs (n = 178):

- 111 entire males (62%)
- 67 neutered males (38%)

What was the MAIN reason for having your dog neutered?



Routinely (n = 29)

The majority of dogs were neutered under the age of 2 years:

- Under 6 months x 3
- 6 – 12 months x 20
- 12 – 18 months x 2
- 18 months – 2 years x 2
- 2 – 5 years x 1
- 5 – 7 years x 1

One owner commented that neutering was a condition of contract. The two older dogs were neutered when rehomed at the age of 3 years, and pending rehoming.

Single and both testicles undescended (n = 5 + 2)

All seven dogs were neutered before the age of 5 years. The two dogs with both testicles undescended were neutered at 18 months – 2 years and 2 – 5 years respectively. The five dogs with a single undescended testicle were all neutered between 6 – 18 months, with three at 6 – 12 months and two at 12 – 18 months.

Cancers (n = 3)

The three dogs with cancers were neutered at 7 – 10 years (prostate and perianal) and over 10 years (testicular).

2.3 Entire / neutered (males) – cont'd

Enlarged prostate and "prostate problems" (n = 7)

These seven dogs were all neutered over the age of 7 years:

- 7 – 10 years x 3
- Over 10 years x 4

Behavioural (n = 9)

There were comments from the owners of four Glens:

One was described as being a "macho" dog (2 – 5 years) and another "hard to handle" (vet recommendation at 6 – 12 months). The other two were neutered for behaviour around bitches in season – one dog bled a lot when roused (7 – 10 years) and the other dog stopped eating for days at a time (5 – 7 years).

Of the other five Glens – 2 were neutered at 6 – 12 months; 1 at 12 – 18 months; and 2 at 2 -5 years.

Other (n – 11)

Ten of these eleven dogs were neutered under the age of 5 years. The other dog was over 10 years and was neutered because of severe bleeding from his penis when roused. The other reasons given were:

▪ Conformational issues	x 2	Both 6 – 12 months
▪ Condition of transfer of ownership	x 1	12 – 18 months
▪ Living with other male terrier	x 1	6 – 12 months
▪ Diagnosis of PRA and living with entire bitches	x 1	2 – 5 years
▪ Carrier of PRA	x 1	2 – 5 years
▪ No plans for breeding / further breeding	x 4	6 – 12 months x 1 12 – 18 months x 2 2 – 5 years x 2

2.3 Entire / neutered (females)

Bitches (n = 201):

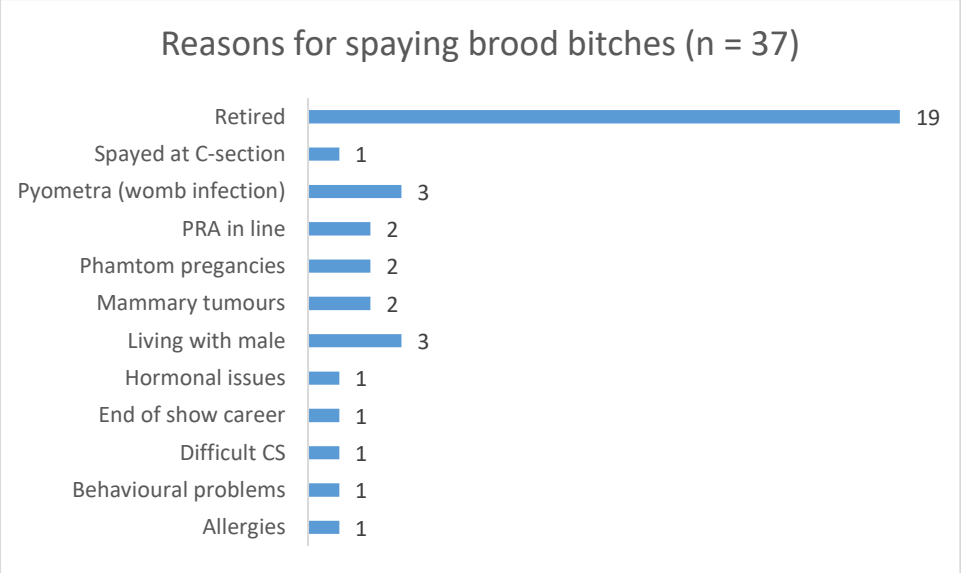
- 108 entire females (54%)
- 93 spayed females (46%)

What was the MAIN reason for having your bitch spayed?

This section has been divided into two – Brood bitches (n = 37) i.e. bitches that have whelped 1 – 3 litters and were subsequently spayed; and Nulliparous bitches (n = 56) i.e. those bitches that have never whelped a litter, which includes 5 bitches who were unsuccessfully mated.

Brood bitches (n = 37)

Those listed as being spayed "Routinely" without any comment have been recorded as "Retired" (n = 19) and the other reasons for spaying these brood bitches are listed in the table below:



The age range of this cohort of bitches is slightly higher:

- 2 – 5 years x 11
- 5 – 7 years x 20
- 7 – 10 years x 6

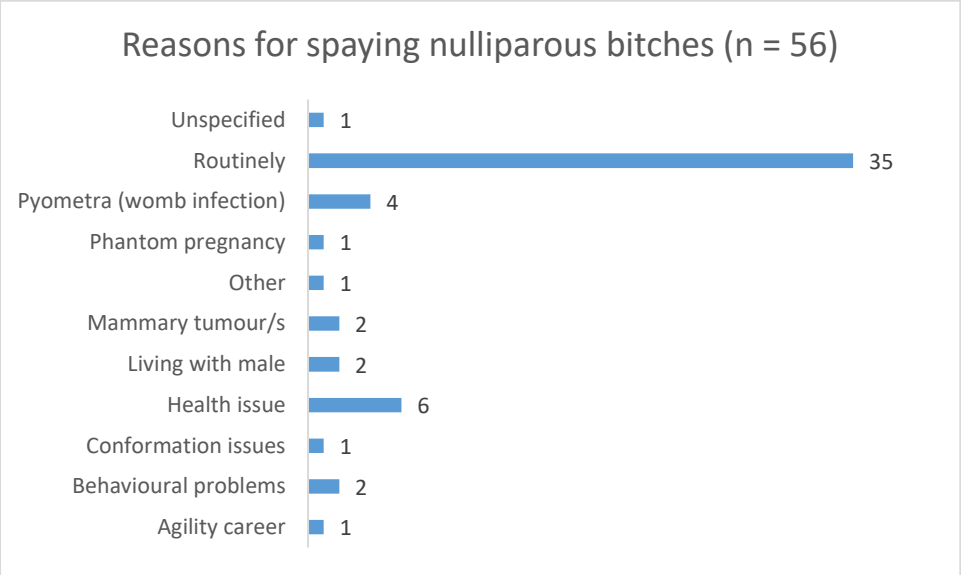
The 2 bitches with mammary tumours were spayed at 2 – 5 years and 5 -7 years. Both bitches had whelped just one litter.

The 3 bitches with pyometra were spayed at 2 – 5 years, 5 – 7 years and 7 – 10 year years. All three bitches had whelped two litters.

The 2 bitches with phantom pregnancies were spayed at 5 – 7 years. Both bitches had whelped two litters.

2.3 Entire / neutered (females) – cont'd

Nulliparous bitches (n = 56)



Routine (n = 35)

- Under 6 months x 2
- 6 – 12 months x 20
- 12 – 18 months x 3
- 18 months – 2 years x 2
- 2 – 5 years x 5
- 5 – 7 years x 3

One owner commented that spaying was a condition of contract (spayed at 18 months – 2 years). The two bitches with conformation issues (1) and phantom pregnancy (1) were spayed at 2 – 5 years. The one bitch with no reason specified was spayed at 18 months – 2 years.

Health issues (n = 6)

These 6 bitches ranged in age from 18 months – 2 years (1); 2 – 5 years (4); and 5 – 7 years (1) when they were spayed.

Mammary tumours (n = 2)

These 2 bitches were spayed at 5 – 7 years.

Pyometra (n = 4)

These 4 bitches ranged in age from 6 -12 months; 2 – 5 years; 5 – 7 years; and 7 – 10 years when they were spayed. The bitch aged 2 – 5 years had been unsuccessfully mated.

Behavioural (n = 2)

These bitches were spayed at 2 – 5 years and 5 – 7 years. The older bitch was living in a multi-Glen household.

General data

2.4 Living / deceased

The numbers of living and deceased Glens was:

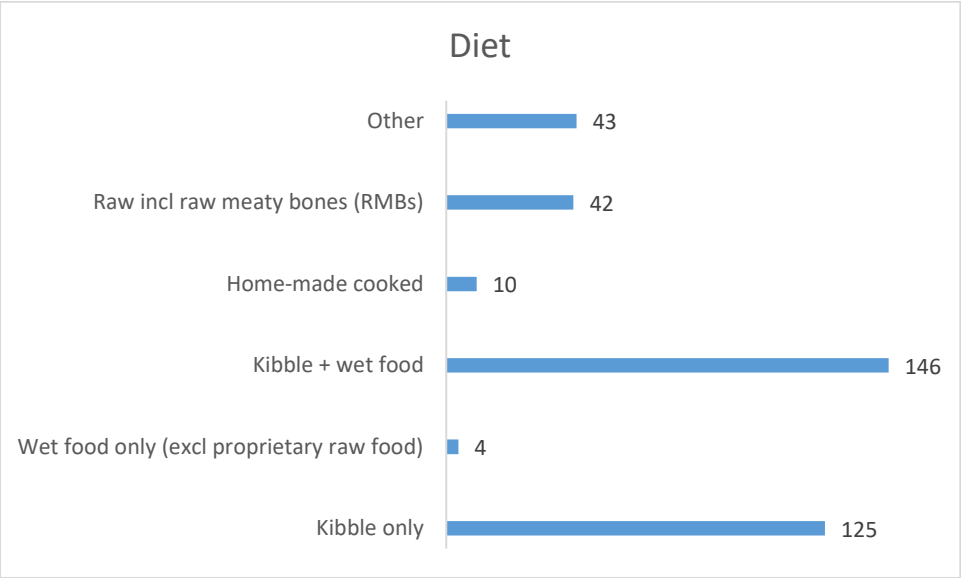
- 334 living Glens (88%)
- 45 deceased Glens (12%)

The 45 deceased Glens includes one who sadly died during the course of the survey.

2.5 Diet

Kibble only and kibble + wet food are the most popular diets provided by Glen owners.

There was no response for 9 Glens.



'Other' also included raw, home-cooked and proprietary wet & dry foods, as well as gluten-free home-cooked; hypoallergenic & prescription skin; prescription urinary; prescription liver; senior; prescription hydrolysed protein diet; prescription diet for Addison's disease.

2.6 Live in / live out

The majority of Glens in this survey live indoors:

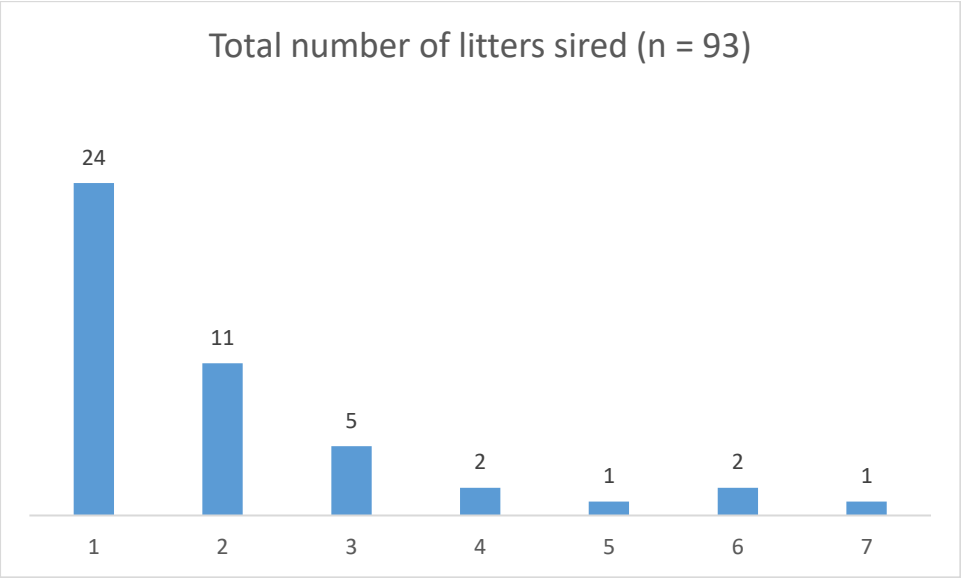
- 359/379 (95%) live in the family house
- 10 live outside e.g. kennel/garage/shed
- There was no response for 10 Glens

Fertility data

3.1 Breeding Glens : Dogs

Has your Glen (dog) ever been mated to a Glen bitch?

- Yes – 52 (29%)
- No – 126 (71%)



i.e. 24 males produced 1 litter; 11 males produced 2 litters; etc.

Unsuccessful matings

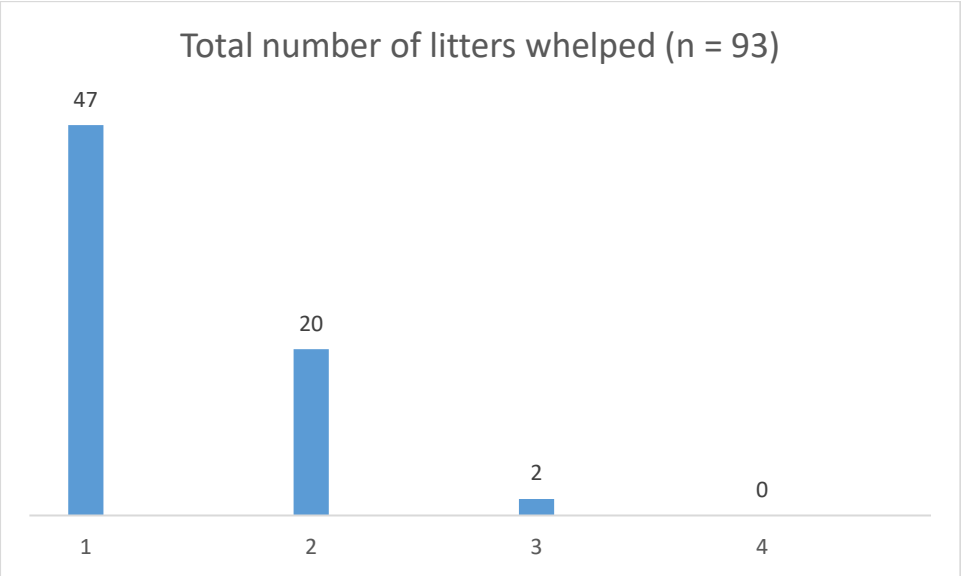
There were 13 dogs with one mating that did not result in puppies and a further 5 dogs with two matings that did not result in puppies.

Fertility data

3.2 Breeding Glens : Bitches

Has your Glen (bitch) ever been mated to a Glen dog?

- Yes – 78 (39%)
- No – 123 (61%)



i.e. 47 females produced 1 litter; 20 females produced 2 litters; 2 females produced 3 litters.

Outcomes from matings

From the total of 78 bitches that were mated to a Glen dog, there were 16 bitches with one mating that did not result in puppies; 6 bitches with two unsuccessful matings; 3 bitches with three matings that did not result in puppies; a further 3 bitches with four unsuccessful matings; and another bitch with five matings that did not result in puppies.

From a total of 147 matings, 93 (63%) were successful but 54 (37%) were unsuccessful.

Of the 78 bitches that were mated, 69 (88%) actually produced one or more litters.

9/78 (12%) of the bitches that were mated did not whelp any litters:

- One unsuccessful mating x 5
- Two unsuccessful matings x 2
- Three unsuccessful matings x 1
- Unspecified x 1 This bitch had emergency surgery for a severe pyometra

3.2 Breeding Glens : Bitches – cont'd

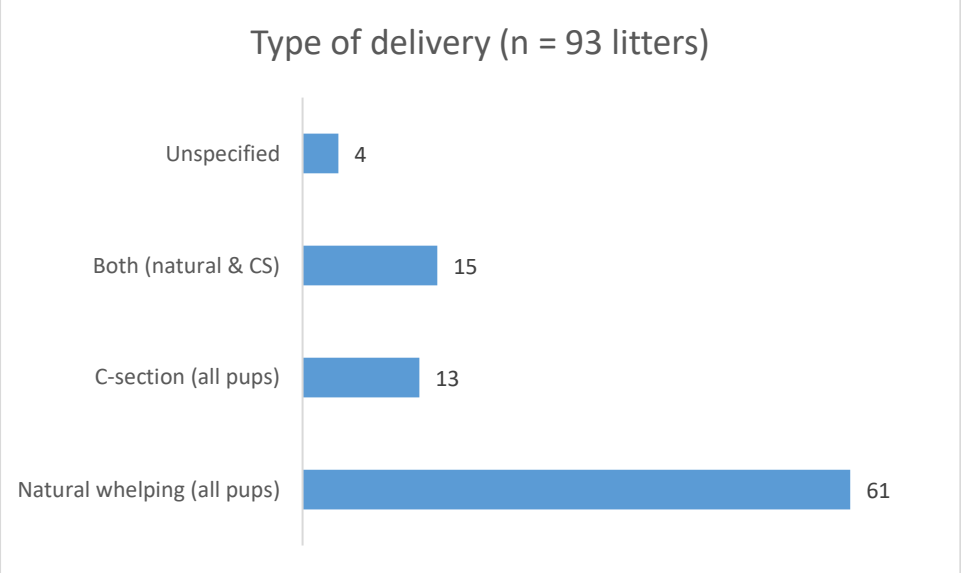
Type of delivery

- At least 61 of the 93 litters (66%) were naturally whelped
- The four unspecified deliveries were from 3 bitches:

  One bitch had inertia and lost all her puppies
  One bitch was adopted from a breeder after having had two litters, with the second one being a C-section
  One bitch delivered 9 pups including one stillborn

- 5 of the 13 C-sections were elective:

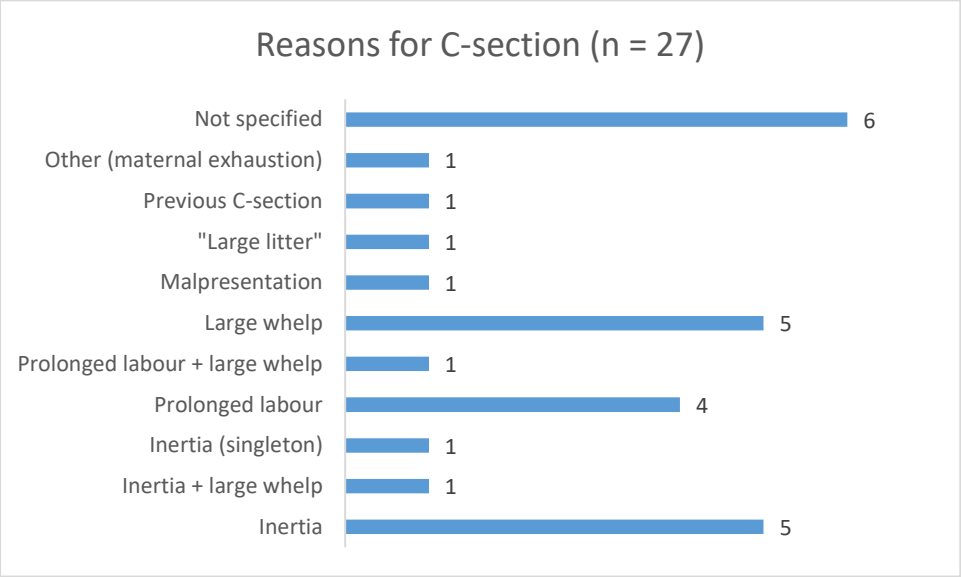
  Previous emergency C-section
  Singleton
  Large litter x 7 pups
  Large whelp (? Large litter) x 10 pups
  Not specified x 10 pups



3.2 Breeding Glens : Bitches – cont'd

Reasons for C-section

In total, there were 27 reported C-sections (22 emergency and 5 elective):



Puppy numbers

559 puppies were whelped from 93 litters – average 6 puppies per litter

- Surviving puppies 499 (89%)
- Stillborn puppies 46 (8%)
- Puppies who dies before 8 weeks 14 (2%)

The most puppies produced by a single bitch was 23 from 3 litters, including 1 stillborn

Abnormalities

Very few abnormalities were reported. (Undescended testicles were not included in this section).

- Umbilical hernia x 2
- Cleft lip/palate x 2 1 puppy was euthanised; the other died within 24 hours
- Tail deformity x 1 "Kinked" tail - this dog had to have his tail docked at about 1 year old
- *"Not fully formed"* x 1 Stillborn
- *"Fontanelle"* x 1 No further details; outcome not specified but this pup was from a litter of 8 with x 3 stillborn puppies

Health data

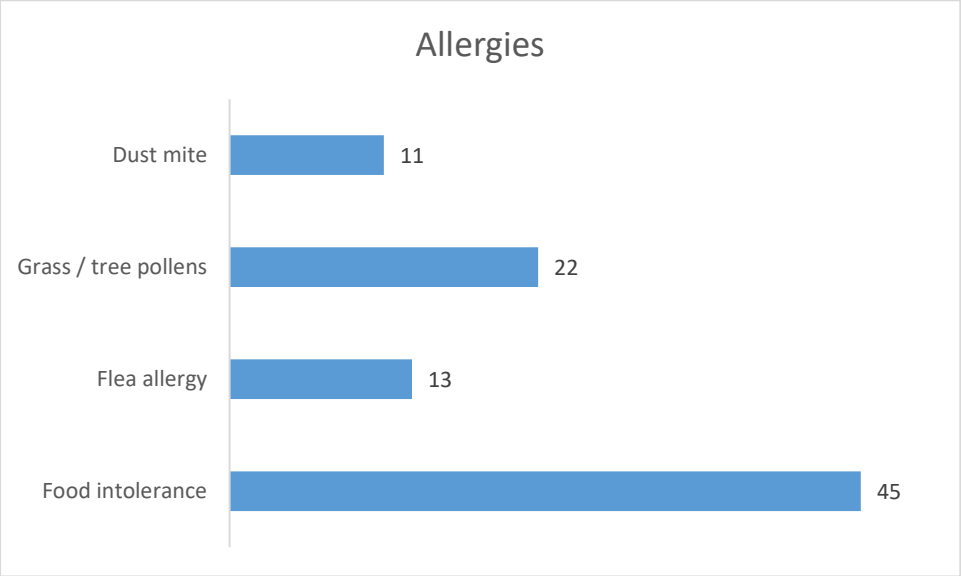
4.1 Allergies

Owners were asked, *"Does your Glen have any allergies and/or food intolerance?"*

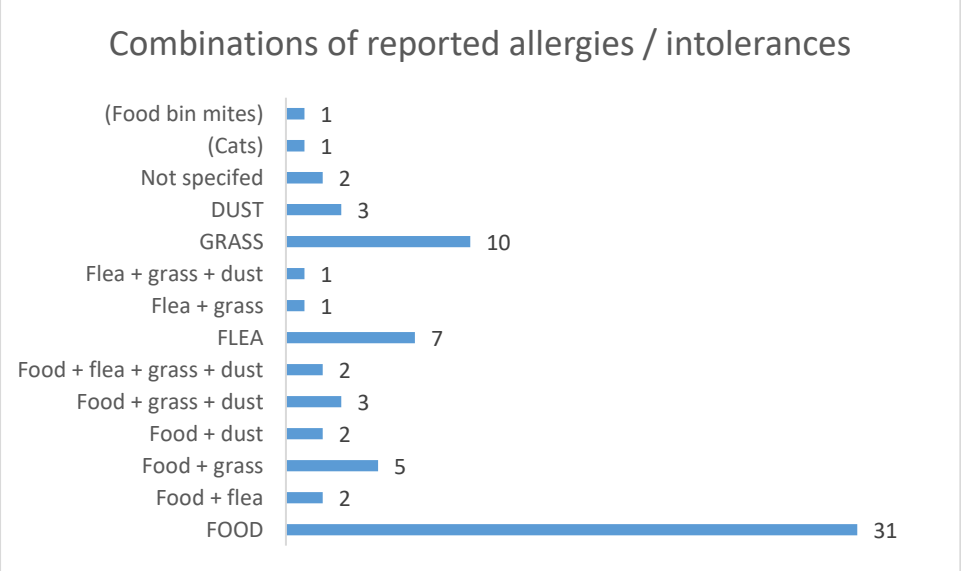
79/379 answered "Yes" but as eight Glens did not have a specified allergy or intolerance (see table below), this number has been revised to 71 (19%).

Six of the above eight Glens were reported to have skin issues. Of these six Glens, two already had records in the 'Skin / coat / ears' section and the other four were moved to this section.

Another two had nothing recorded and so were removed from the 'Allergy' section.



16/379 Glens (4%) were reported to have more than one allergy / intolerance and these combinations are listed below:

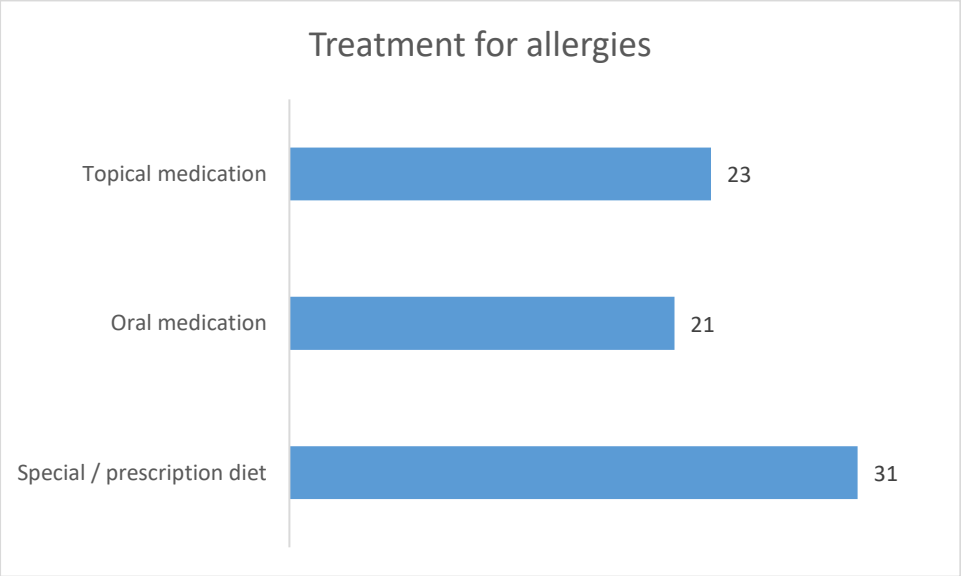


4.1 Allergies – cont'd

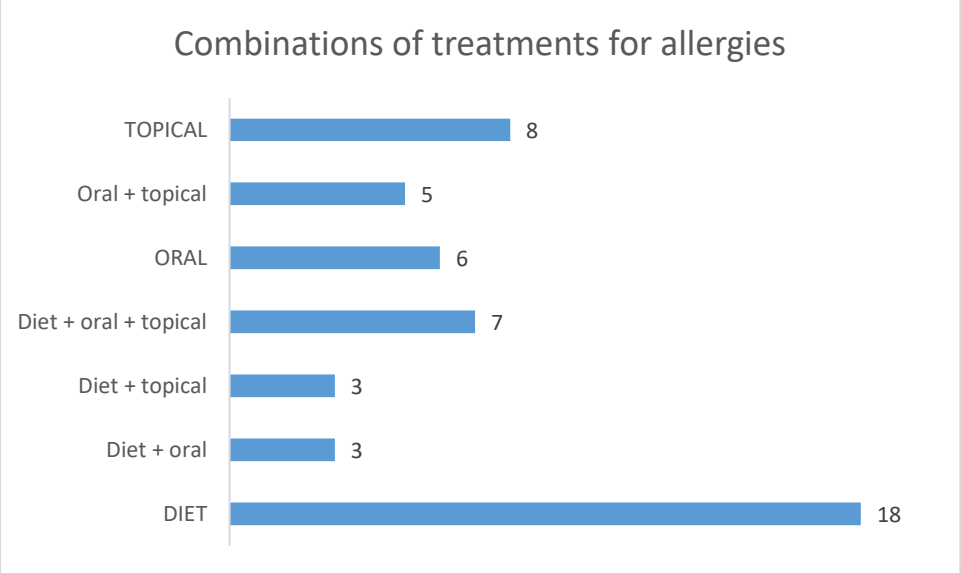
The owners of two Glens with unspecified allergies added comments about their Glens' problems:

- One was "*doing okay now on a limited diet*"
- The owner of the other Glen reported bald patches developing around the tail area after food was changed from kibble to wet food but commented that the skin issues could have been hormonal, as this happened around the time of the bitch's season, although not at her next season

50/379 Glens (13%) were reported as having treatment for their allergies:



18/379 Glens (5%) were reported to be receiving more than one type of treatment for their allergies and these combinations are listed below:



Allergy/immunotherapy injections, supplements and avoidance of certain foods were listed as management strategies. Three Glens in this section were recorded as taking Apoquel.

4.1 Allergies– cont'd

OFA[2]	68/345 (20%) reported allergies
	N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years
Finland[1]	29/136 (21%) reported allergies – 14 cases diagnosed by a vet & 15 cases by owner

4.2 Skin / coat / ears

Owners were asked, "*Does your Glen have any serious or on-going or recurrent skin / coat / ear issues?*"

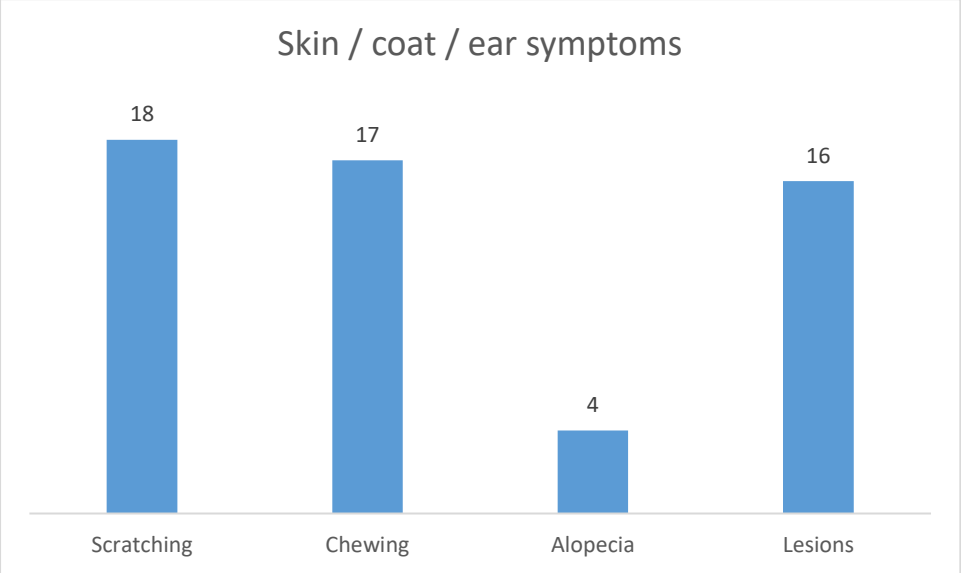
53/379 answered "Yes" but a further four were added from the 'Allergy' section, as they did not record any specific allergies but did report skin issues, and so this number has been revised to 57 (15%).

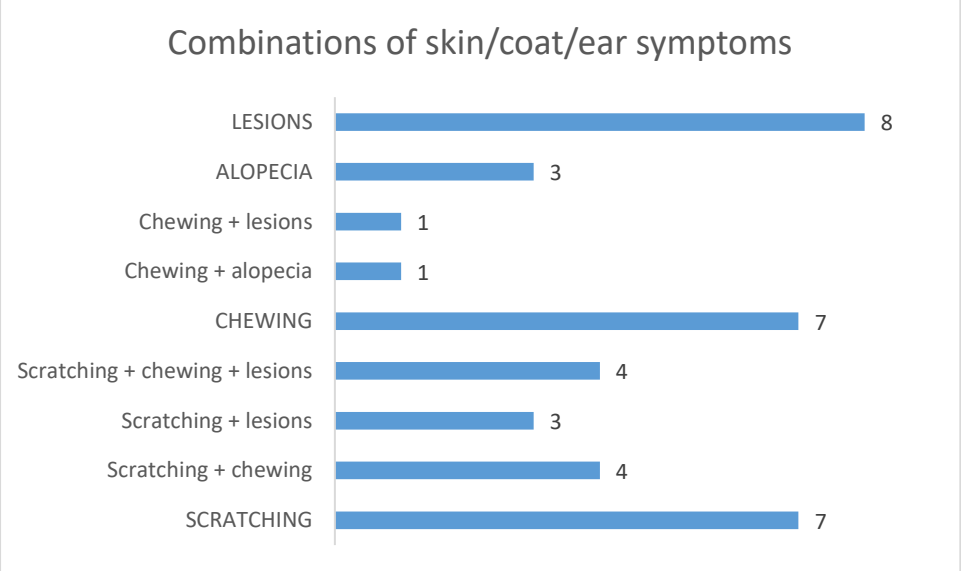
Symptoms

Owners were asked to report any of the following symptoms:

- *Always scratching him/herself, to the point where it causes damage / distress*
- *Always chewing him/herself, to the point where it causes damage / distress*
- *Seasonal hair loss*
- *Skin lesions e.g. pustules, scabs, blisters*

38 Glens had symptoms reported:

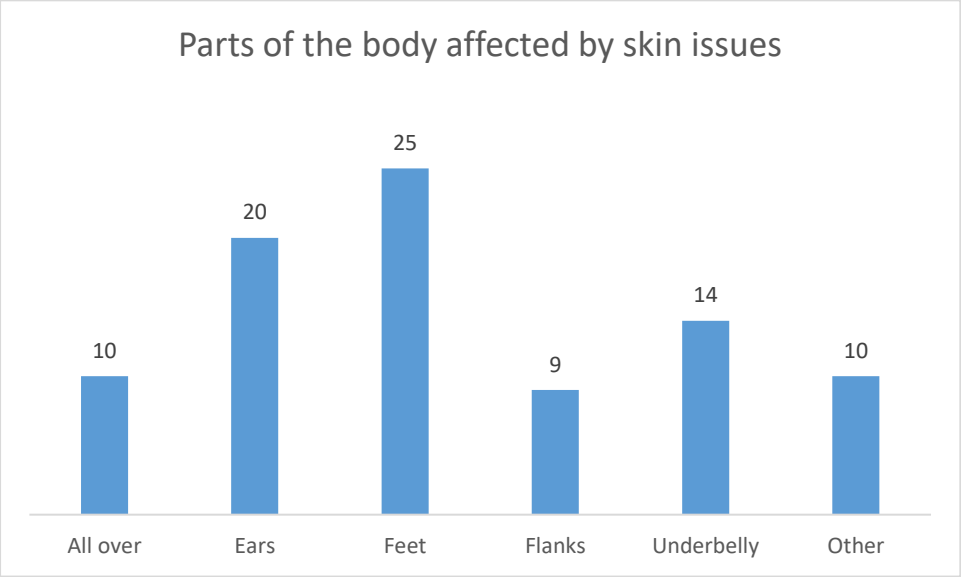




4.2 Skin / coat / ears – cont'd

Affected areas

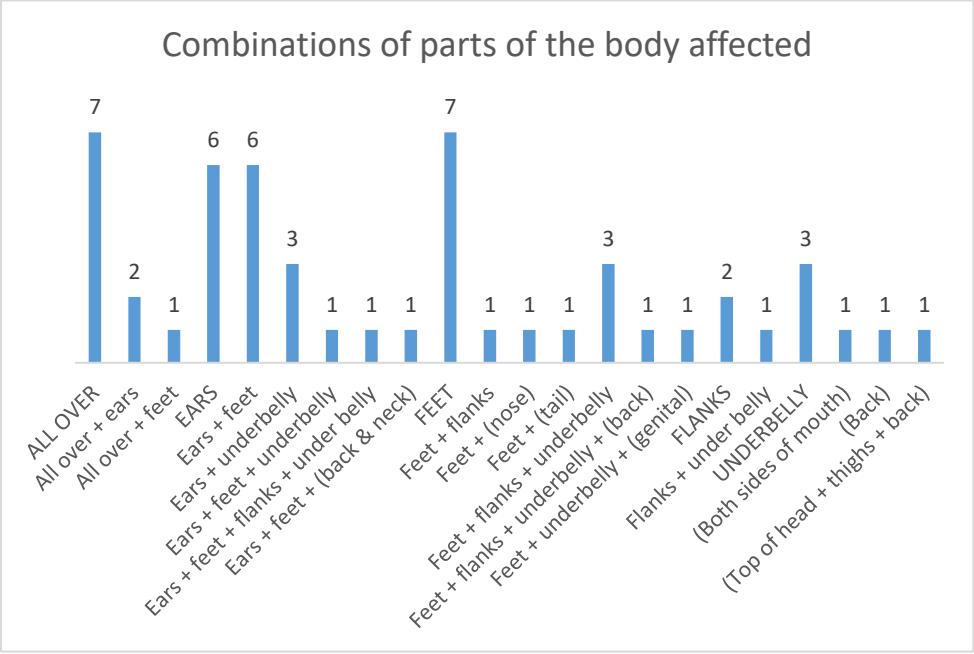
The owners of 52 Glens reported the areas of the body that were affected:



The other parts of the body affected included back (3), thighs, tail, genitals, neck, top of head, nose and sides of mouth.

One owner commented that their Glen scratched one ear frequently "*but no damage*".

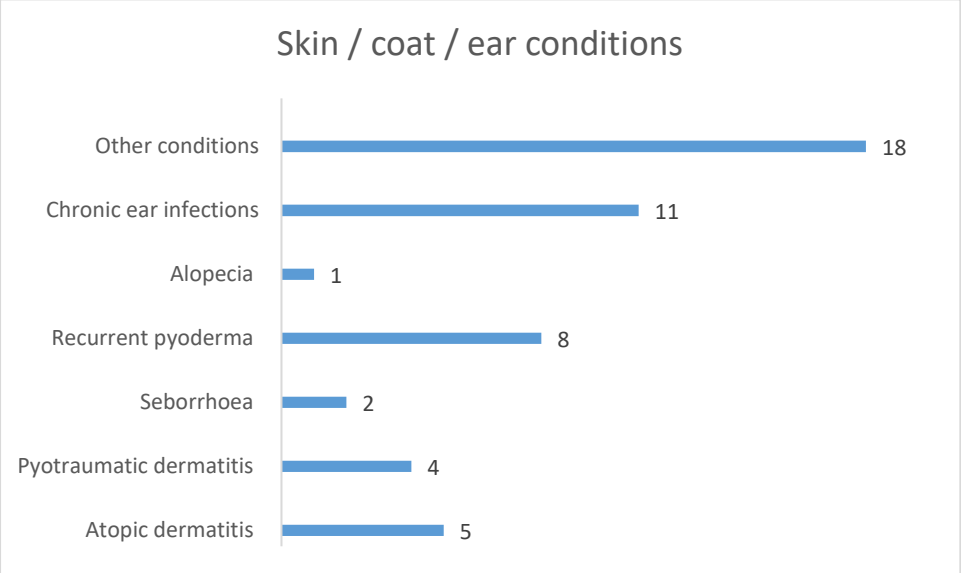
Another commented that their Glen chewed "*the parts he can reach with his mouth*"!



4.2 Skin / coat / ears – cont'd

Diagnoses

29/379 Glens (8%) were reported as being diagnosed with one or more specific conditions:

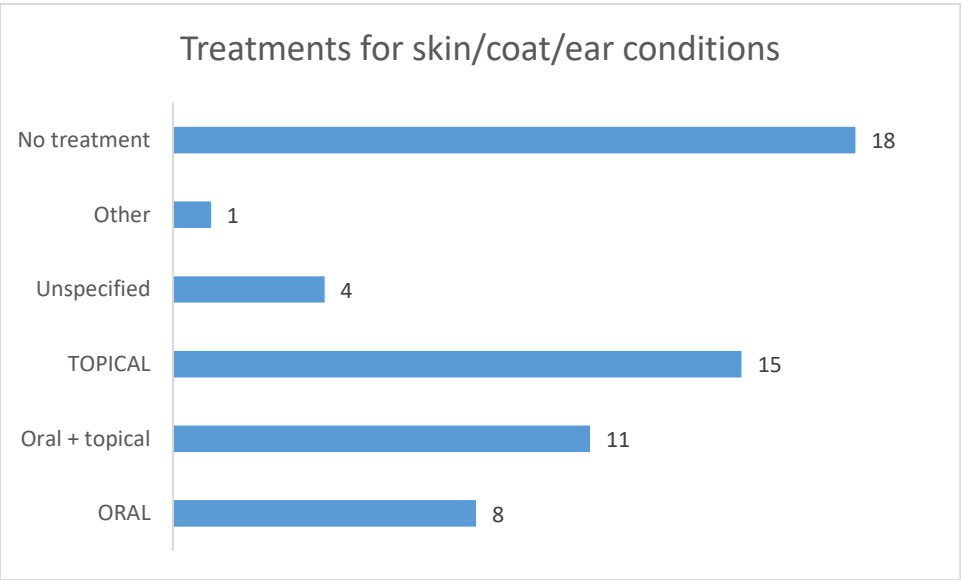


Other conditions listed included Comedone Syndrome; sebaceous cysts; warty growths; skin tags; non-cancerous lumps; and yeast infections.

Treatment

35/379 Glens (9%) were receiving treatment for skin/coat/ear conditions

19 Glens were reported as receiving oral medication and 26 Glens topical treatment:



The owners of 18 Glens responded "No" to the question, "*Does your Glen receive ongoing or regular prescribed treatment for his/her skin / coat / ear condition/s?*" and a further 4 did not respond to this question.

4.2 Skin / coat / ears – cont'd

Some owners documented the medication their Glen was receiving:

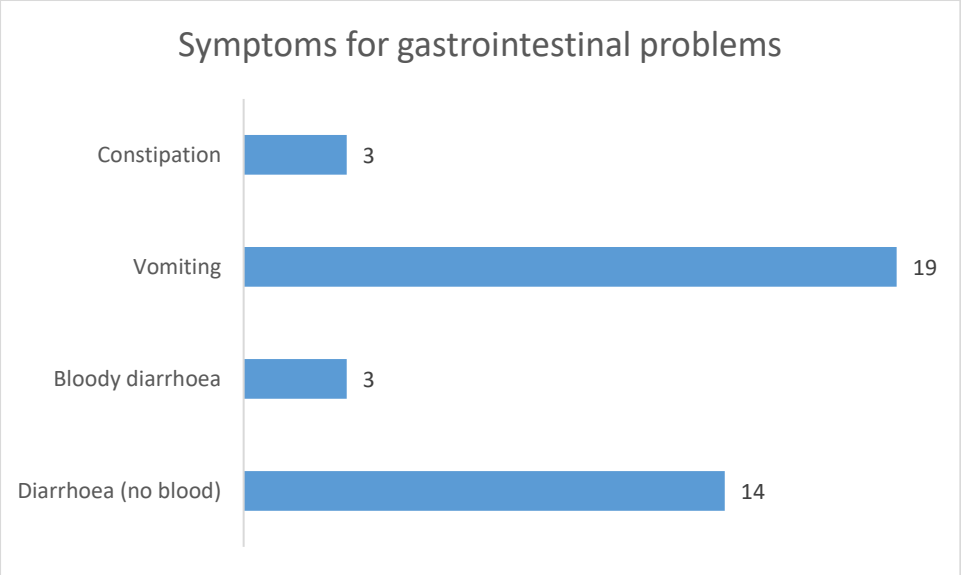
Apoquel	x 4
Artuvetrin (immunotherapy) injection	x 1
Antihistamines (incl Benadryl & hydroxyzine)	x 3
Burow's solution for ears	x 1
Zymox for ears	x 1
Malaseb shampoo	x 1

OFA[2]	49/345 (14%) reported skin disorders
	N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years
Finland[1]	57/136 (42%) reported itching or skin problems

4.3 Digestive

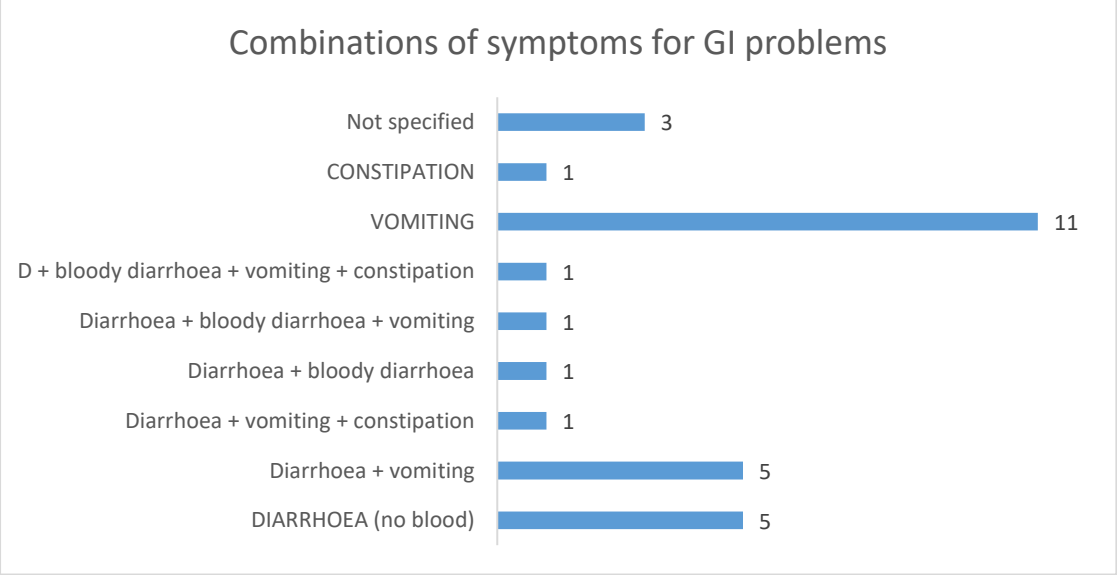
Owners were asked, *"Does your Glen have any digestive issues e.g. persistent or frequent episodes of diarrhoea and/or vomiting, or constipation?"*

32/379 responded "Yes" but as two Glens had no symptoms and no diagnosis recorded and another with intrahepatic shunt was recorded in the 'Liver / Kidney' section, this number has been revised to 29 (8%).



The above symptoms were reported for 26 of the 29 Glens

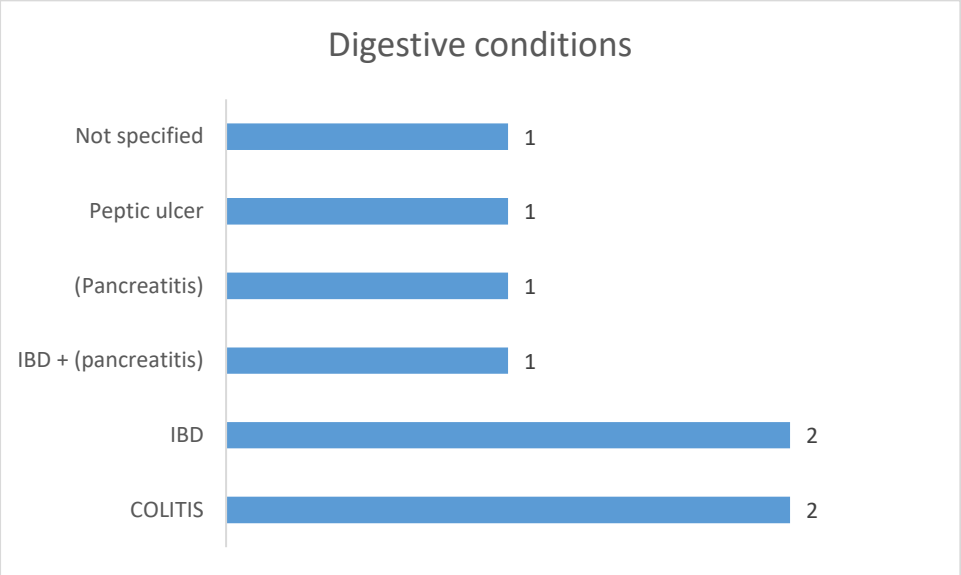
9 Glens were reported as having more than one symptom:



- 2 Glens did not have their symptoms recorded, but one was reported as not able to tolerate wet or rich foods and the other was recorded as having soft stools, rather than diarrhoea, with certain foods
- 1 Glen had two bouts of severe constipation and required surgery to remove a blockage caused by ingestion of bones

4.3 Digestive – cont'd

- Three owners related their Glens' symptoms to scavenging, anxiety and possible bacterial infection. Four owners reported that changing diet helped, and another owner said that soaking her elderly Glen's kibble first and dividing his meals throughout the day stopped the vomiting.



- 3 Glens had a diagnosis of inflammatory bowel disease (IBD)
- 2 Glens had a diagnosis of colitis, which comes under the "umbrella" of IBD
- 1 Glen was diagnosed with a peptic ulcer
- 2 Glens had gastrointestinal symptoms associated with pancreatitis; the cause of the symptoms and pancreatitis for one of these Glens was thought to be because s/he had surgery at the pancreatic opening for an obstruction after swallowing a toy (vomiting) and the Glen diagnosed with IBD + pancreatitis had symptoms of diarrhoea + bloody diarrhoea + vomiting – both these Glens are listed in the Endocrine section

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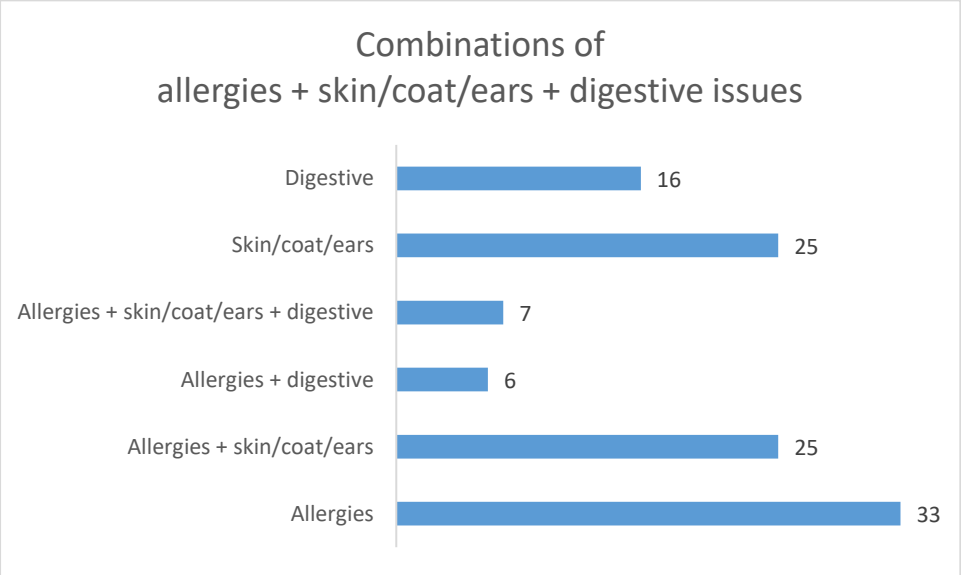
OFA[2]	30/345 (9%) reported gastrointestinal disorders
	N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years
Finland[1]	51/136 (38%) reported "sensitive stomach"

Allergies + skin/coat/ears + digestive

There is a significant overlap with the Allergies and Skin / coat / ears and Digestive sections.

Some Glens had a combination of allergies plus skin and/or digestive issues reported:



112/379 Glens were reported to have allergies or skin or digestive issues or a combination of these health problems

This represents almost one third (30%) of the survey population

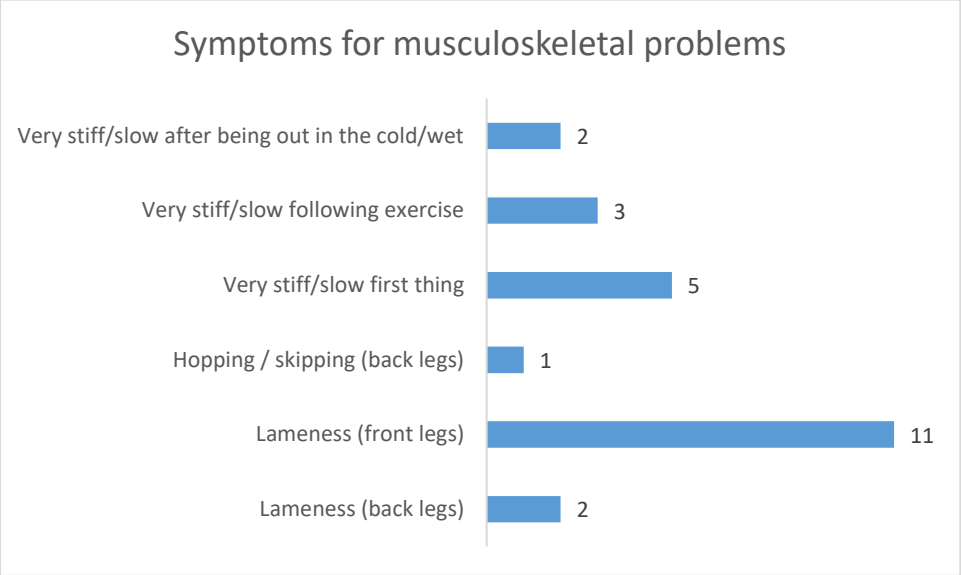
38/379 Glens (10%) had skin and/or digestive issues associated with their allergies

4.4 Musculoskeletal

Owners were asked, *"Is your Glen PERSISTENTLY very lame or very stiff AND/OR has your Vet or Specialist diagnosed your Glen with a musculoskeletal problem?"*

29/379 (8%) answered "Yes"

Owners were asked, *"Please check whichever of the following signs your Glen exhibits FREQUENTLY or ALWAYS"*



The above symptoms were reported for 17 of the 29 Glens

NB. Some Glens were reported as having more than one symptom:

Lameness front legs & very stiff/slow first thing in the morning

1. Under 6 months old at onset of symptoms; had elbows x-rayed and diagnosed with elbow dysplasia; on daily pain medication
2. 6 – 12 months old at onset of symptoms; had elbows X-rayed; diagnosed with PCDU and had corrective surgery
3. 7 – 10 years old at onset of symptoms; no investigations; diagnosed with arthritis

Very stiff/slow first thing in the morning & very stiff/slow after exercise

1. 10 years old at onset of symptoms; no investigations; diagnosed with arthritis that is helped by daily pain medication

Hopping/skipping (back legs) & very stiff/slow first thing in the morning & very stiff/slow after exercise

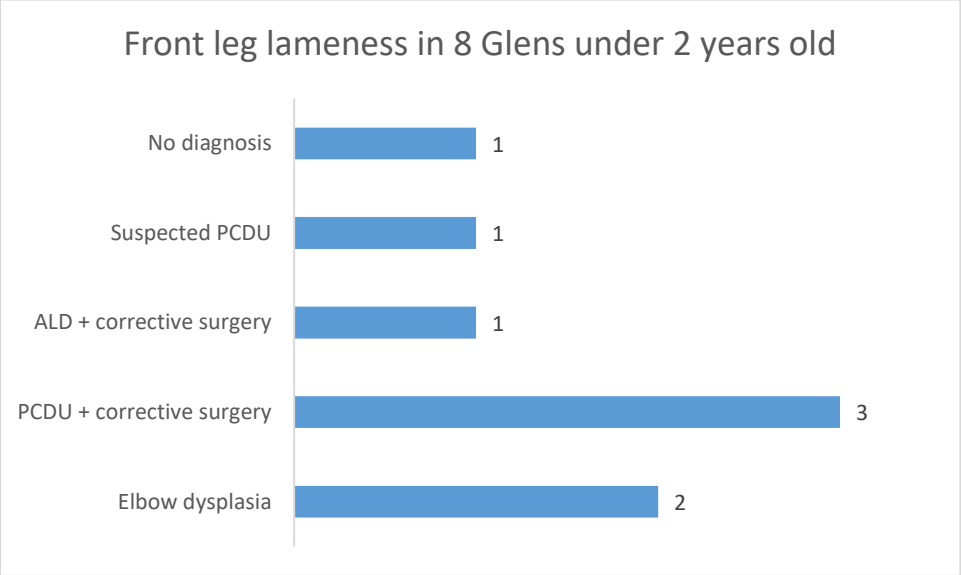
1. > 10 years old at onset of symptoms; no investigations; back problems helped by daily pain medication

4.4 Musculoskeletal – cont'd

Lameness of the front legs was the most commonly reported symptom (11 Glens) with 8 being under 2 years of age at onset of symptoms.

Two of these 8 under-2-years-old Glens were also reported as being *very stiff or slow first thing in the morning*. All 8 Glens had elbow X-rays.

These Glens had the following diagnoses:



Angular limb deformity (ALD) is an "umbrella" term that covers PCDU

The owner of the Glen with no diagnosis commented, "*left foot turns out*"

Pain medication

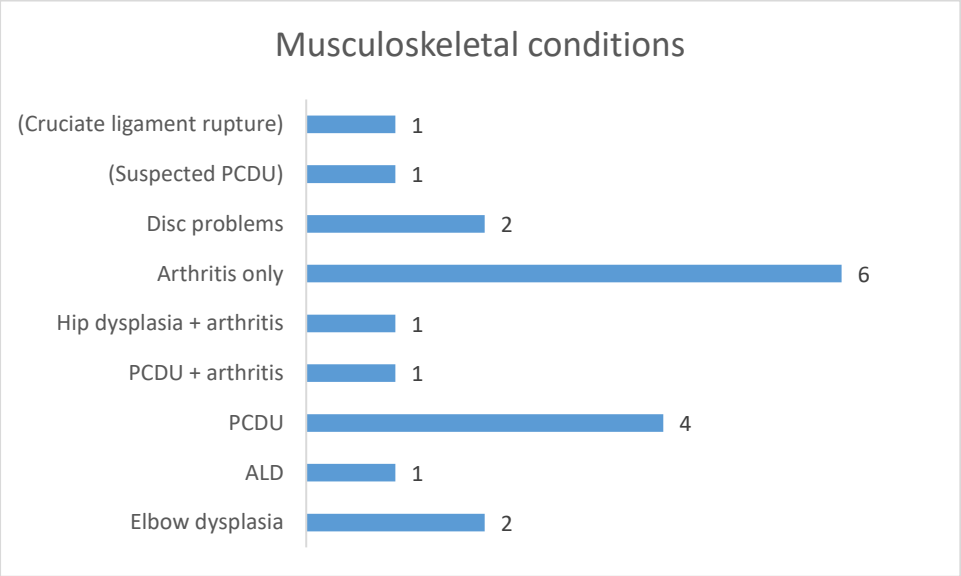
Only two of these 8 Glens were reported as not requiring pain medication. The two with elbow dysplasia take daily pain medication; three others are given pain medication on an "as required" basis; and one owner did not report whether the pain medication was administered daily or as required.

Looking at ALL the Glens whose owners responded to the question about pain medication (19), there are just 2 Glens who do not require pain medication – 6 Glens have daily pain medication; 10 Glens have pain medication as required; the frequency of pain medication was not specified for one Glen.

Looking at ALL the Glens who owners responded to the question about surgery (24), there were 6 Glens who underwent surgery – the four above (see table), plus one who was described as having "*abnormal leg growth needing pins*" (no age or symptoms given); and another who underwent surgery at under 2 years of age following a broken leg; further surgery was required for this dog as "*the leg did not fix properly because of the dramatic growth that was occurring at the time*".

4.4 Musculoskeletal – cont'd

The owners of 17 Glens reported a diagnosis from a vet/specialist and a further two owners reported a "suspected" diagnosis of PCDU and cruciate ligament rupture, respectively:



NB. Two Glens were reported as having arthritis in addition to another documented musculoskeletal condition – PCDU (lameness front legs) and hip dysplasia (very stiff/slow following exercise and after being out in the cold/wet).

Four of the remaining six Glens diagnosed with arthritis reported symptoms of stiffness, rather than lameness – being very stiff/slow first thing in the morning and/or following exercise – with just one of these four reporting lameness of the front legs as well.

Of the other two Glens, with no symptoms documented, one was reported to have an additional vertebra in his spine and developed osteoarthritis in both hips; and the other was reported to have spinal stenosis (documented in the 'Neurological' section).

4.4 Musculoskeletal – cont'd

OFA[2] 26/345 (8%) reported an orthopaedic issue:

Premature closure of the distal ulna (PCDU)	x 16
Elbow dysplasia	x 3
Hip dysplasia	x 4

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] 9/136 (7%) reported an orthopaedic diagnosis:

Hip dysplasia	x 6/136
Other (unspecified) joint issue	x 3/136
Elbow dysplasia	No reported cases
PCDU	Not on list

25/136 (18%) reported limping under 1 year old with 9 (7%) reporting long tem or recurrent limping
50/136 (37%) reported limping over 1 year old with 24 (18%) reporting long tem or recurrent limping
N.B. No differentiation between fore and hind leg limping in the Finnish survey

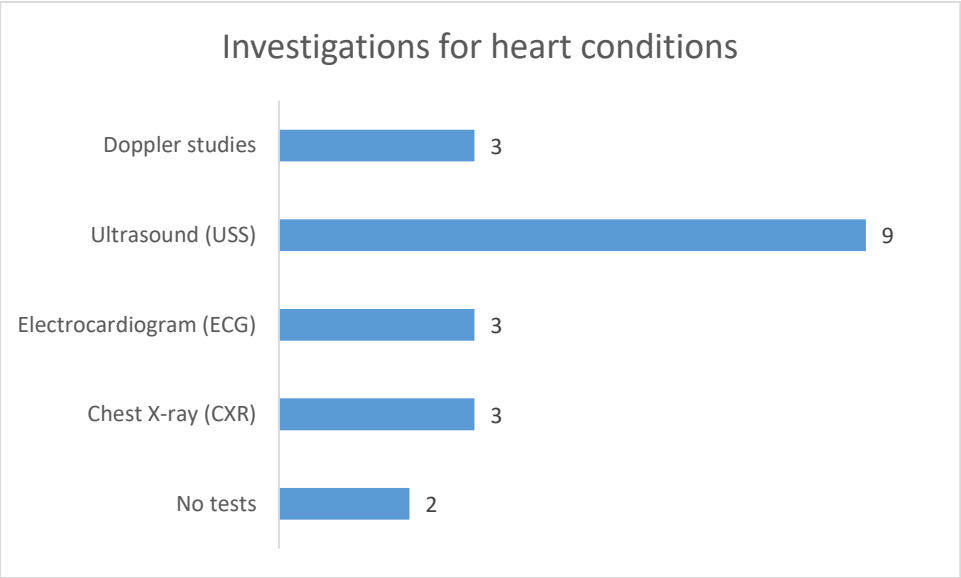
4.5 Cardiovascular

Owners were asked, "*Does your Glen have a heart murmur AND/OR has your Vet or Specialist diagnosed your Glen with a heart or blood vessel condition?*"

12/379 (3%) answered "Yes"

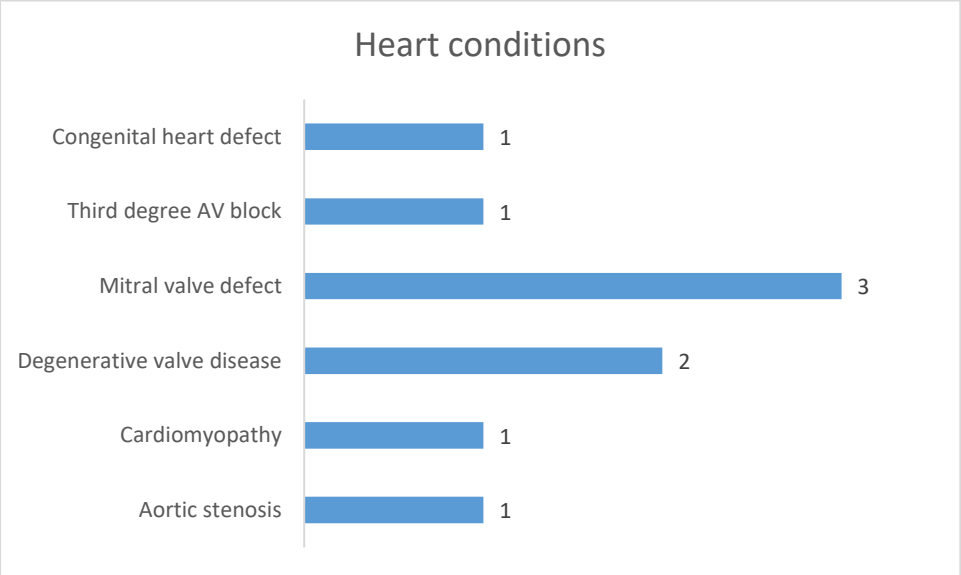
Ten Glens were reported as having a heart murmur. Six owners were able to report the grade of heart murmur – from 1/6 to 6/6, where 6/6 is the most severe. Two Glens had a Grade 1/6 murmur; two Glens had a grade 3/6 murmur; one Glen had a Grade 4/6 murmur; and one Glen, who was found to have a severe grade 6/6 murmur at under 6 months of age went on to have surgery for a congenital heart defect. One older Glen, who was found to have a Grade 3/6 murmur after the age of 10 years, developed several heart problems and went on to have a pacemaker fitted at 14½ years of age. Another older Glen was commenced on medication at the age of 13 years for a "weak heart".

Two Glens over the age of 10 years when a heart murmur was identified did not have any investigations. One owner did not specify any investigations and another owner reported that their Glen had undergone investigations with a previous owner. The other eight Glens underwent one or more of the following investigations:



4.5 Cardiovascular – cont'd

The following diagnoses were reported for 7 of the twelve Glens, with one Glen having more than one heart condition reported:



OFA[2] 10/345 (3%) reported a cardiovascular issue:

Heart murmur	x 6
Degenerative valve disease	x 4
Mitral valve defect	x 1
Cardiomyopathy	x 1
Other	x 2

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] 3/136 (2%) reported (unspecified) heart disease

4.6 Endocrine

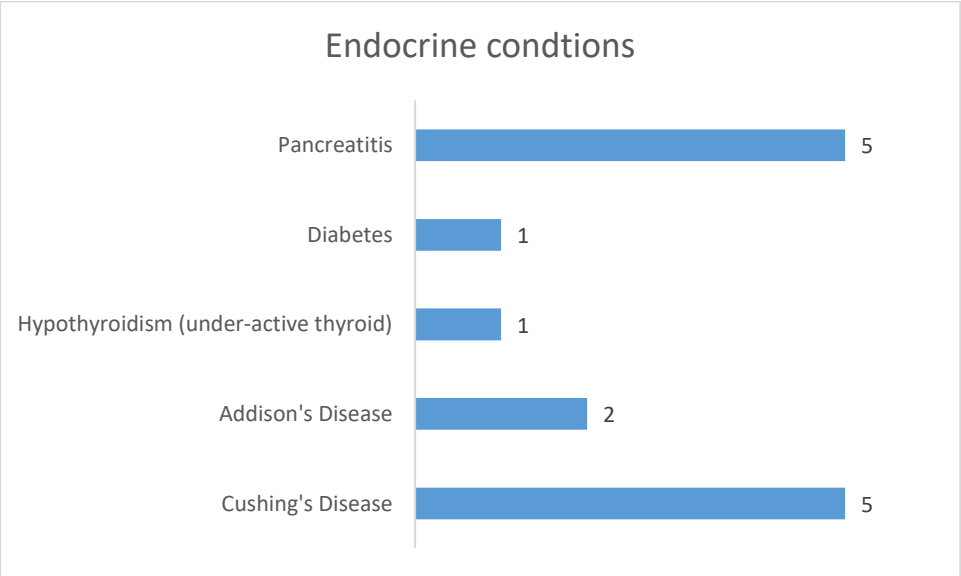
Owners were asked, "*Has your Vet or Specialist diagnosed your Glen with an endocrine disorder e.g. Cushing's, Addison's, hypothyroidism, diabetes?*"

14/379 (4%) answered "Yes"

Diagnoses were reported for 13/14 Glens. One owner reported that their over 10 years old Glen had "abnormal blood work" that improved after a month of medication, but no further information was provided; this Glen was also being investigated for liver/kidney disorders. The majority of Glens were over 10 years of age at diagnosis. The two Glens aged 2 – 5 years were diagnosed with pancreatitis and "atypical Addison's" respectively. The one Glen aged 5 – 7 years was reported to have had one episode of pancreatitis. The two Glens aged 7 – 10 years were diagnosed with hypothyroidism and Addison's respectively. The others were all over 10 years old at diagnosis. One of these older Glens was diagnosed with both Addison's and pancreatitis.

One of the Glens with pancreatitis was thought to have developed this because s/he had surgery at the pancreatic opening for an obstruction after swallowing a toy.

The following diagnoses were reported for 13 of the fourteen Glens, with one Glen having more than one endocrine condition reported:



4.6 Endocrine – cont'd

OFA[2] 12/345 (3%) reported endocrine disorders:

Cushing's disease	x 4
Pancreatitis	x 2
Diabetes	x 1
Hyperthyroidism (over-active thyroid)	x 1
Other	x 2

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] No reported cases of thyroid disease, diabetes, Cushing's or Addison's

4.7 Ocular

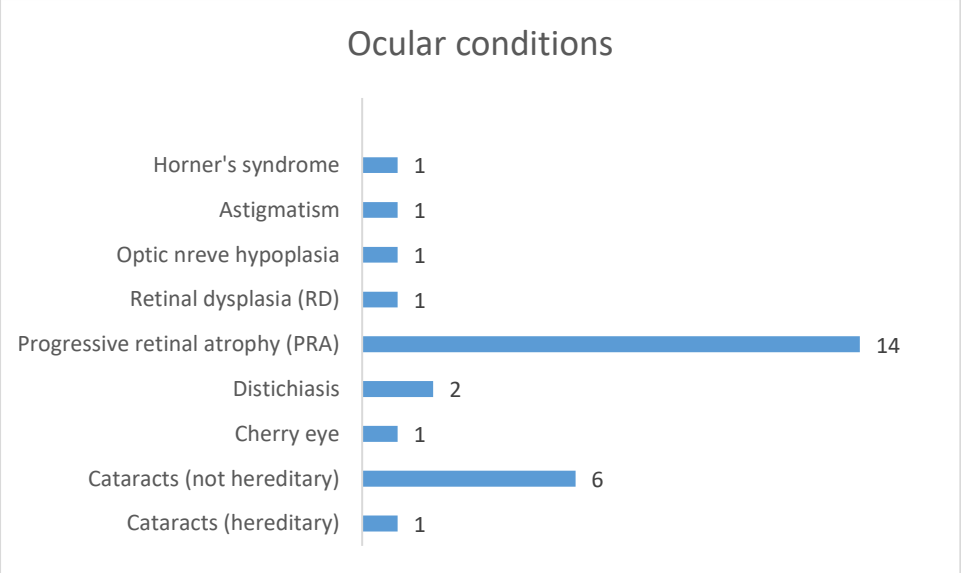
Owners were asked, "*Has your Vet or Specialist diagnosed your Glen with an ocular disorder?*"

33/379 answered "Yes" but as one Glen was reported as simply being a carrier for PRA, this number has been revised to 32 (8%).

One Glen was blinded in one eye in an accident and subsequently had the eye removed because of infection; and another also had to have an eye removed because of an infection in the orbit. One owner reported a case of conjunctivitis and another owner reported suspected progressive retinal atrophy (PRA), as their Glen's sight had started deteriorating at the age of 5 years.

Six Glens had eye problems diagnosed under the age of 2 years – optic nerve hypoplasia (1); PRA (1); astigmatism (1); multifocal retinal dysplasia (1); distichiasis (1); and cherry eye (1). The Glen with cherry eye had 2 surgeries at 4 & 5 months to correct this. The one Glen with a diagnosis made after the age of 10 years was found to have a non-hereditary cataract.

The following diagnoses were reported for 28 of the thirty-two Glens:



N.B. Half of the ocular diagnoses reported in this survey were for progressive retinal atrophy (PRA). Future health surveys should see a significant drop in the total number of eye diseases reported, because of the DNA test for crd3 (the Glen variant of PRA). The test was launched in 2010 and since then, breeders have been able to make informed breeding choices to avoid puppies being born that are at risk of developing crd3.

4.7 Ocular – cont'd

OFA[2] 22/345 (6%) reported eye disorders:

PRA	x 10
Cataracts (senile)	x 6
Dry eye	x 2
Glaucoma	x 1
Corneal ulcer	x 1
Other	x 4

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] From 136 Glens, the following eye conditions were reported:

PRA (including carrier status)	x 19
Cataracts	x 2
Distichiasis	x 7
Retinal dysplasia	x 1
Entropian	x 1

4.8 Liver & kidneys

Owners were asked, *"Has your Vet or Specialist diagnosed your Glen with a liver or kidney disorder?"*

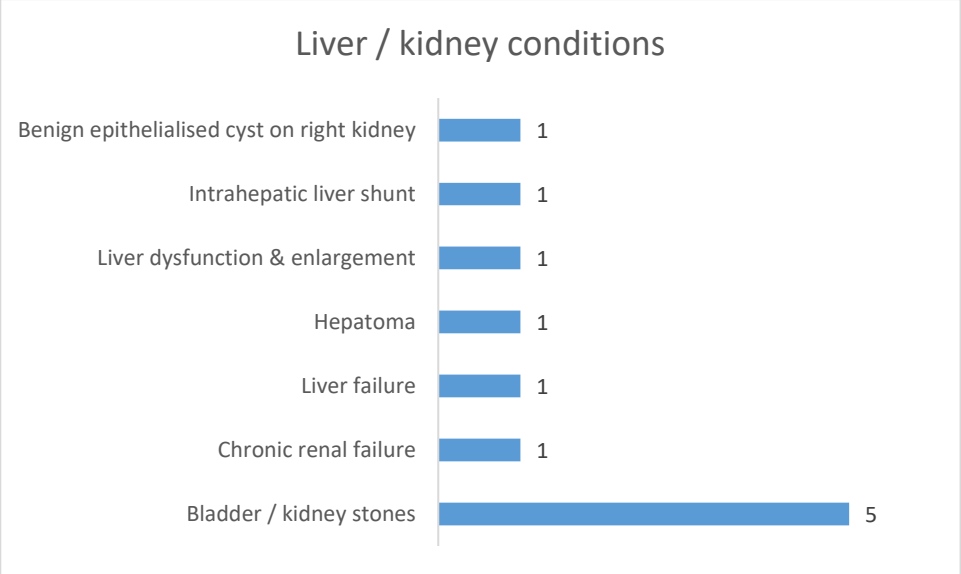
13/379 answered "Yes" but as two Glens had conditions reported elsewhere in the survey, this number has been revised to 11 (3%):

1. Metastatic cholangiocarcinoma already recorded in 'Cancer' section
2. Glen with a problem processing protein already recorded in the 'Digestive' section

The owners of three of the 5 Glens with bladder/kidney stones, specified struvite cystoliths (stones). Three were diagnosed with stones at 2 – 5 years old, with one Glen also being diagnosed with a hepatoma at the age of 7 – 10 years. One owner reported that their Glen had to have 3 or 4 surgeries. One Glen had 2 surgeries for stones at 5 – 7 years old and another had surgery at 7 – 10 years of age.

One owner reported that their over 10 years old Glen had "abnormal blood work" that improved after a month of medication, but no further information was provided; this Glen was also being investigated for endocrine disorders. The other three Glens over 10 years old had diagnoses of liver dysfunction & enlargement; chronic renal failure stage 3; and benign epithelialised cyst on right kidney that was removed surgically. The Glen with intrahepatic liver shunt was diagnosed at under 2 years of age.

The following diagnoses were reported for 10 of the eleven Glens, with one Glen having 2 liver/kidney conditions reported:



4.8 Liver & kidneys – cont'd

OFA[2] 10/345 (3%) reported liver disorders & 21/345 (6%) reported kidney/urinary disorders:

Portosystemic shunt	x 1
Other liver disorders	x 6
Bladder & kidney stones	x 4
Renal dysplasia	x 1
Familial kidney disease	x 1
Chronic lower urinary tract infection	x 1
Other kidney/urinary disorders	x 6

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] From 136 Glens, the following liver & kidney conditions were reported:

Liver disease	x 2
Urinary tract infection	x 20
Urinary tract stones & crystals	x 11

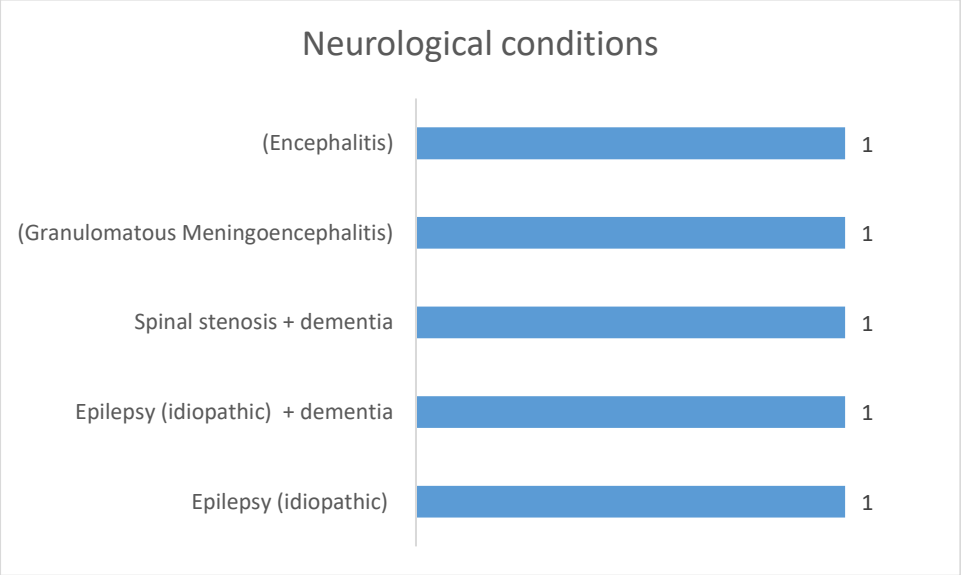
4.9 Neurological

Owners were asked, "*Has your Vet or Specialist diagnosed your Glen with a neurological disorder e.g. epilepsy, spinal stenosis, dementia/senility?*"

7/379 answered "Yes" but this number has been revised to 5 (1%) as two owners did not respond to any of the questions in this section.

The two Glens over 10 years old were reported as having dementia; and one died at 12½ years old from a grand mal seizure. The other Glen with idiopathic epilepsy was diagnosed at 7 – 10 years of age and had one small seizure per year for four years progressing to a longer seizure with longer recovery time. The two Glens aged 2 -5 years old at diagnosis had encephalitis and granulomatous meningoencephalitis (GME). The Glen with GME died from this condition.

The following diagnoses were reported for these five Glens:



OFA[2] 7/345 (2%) reported neurological and/or muscular disorders:

Spinal stenosis	x 1
Epilepsy	x 1
Other	x 3

N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

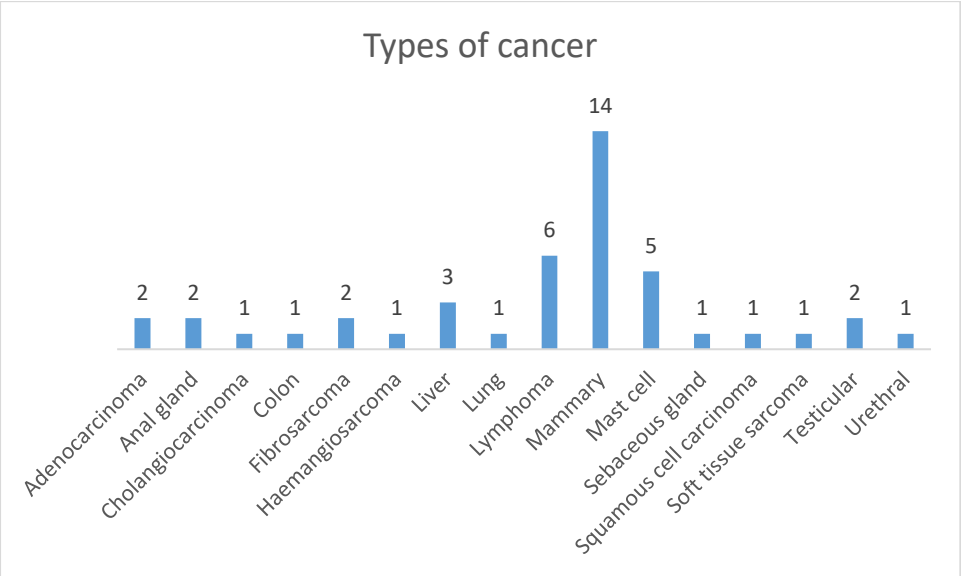
Finland[1] From 136 Glens, the following neurological conditions were reported:

Epileptic seizures	x 2

4.10 Cancer

Owners were asked, *"Has your Vet or Specialist diagnosed your Glen with cancer?"*

40/379 answered "Yes" but as two were reported as benign mammary tumours, this number has been revised to 38 (10%).



Mammary cancer & lymphoma were also the two most commonly reported cancers in the OFA Health Survey[3].

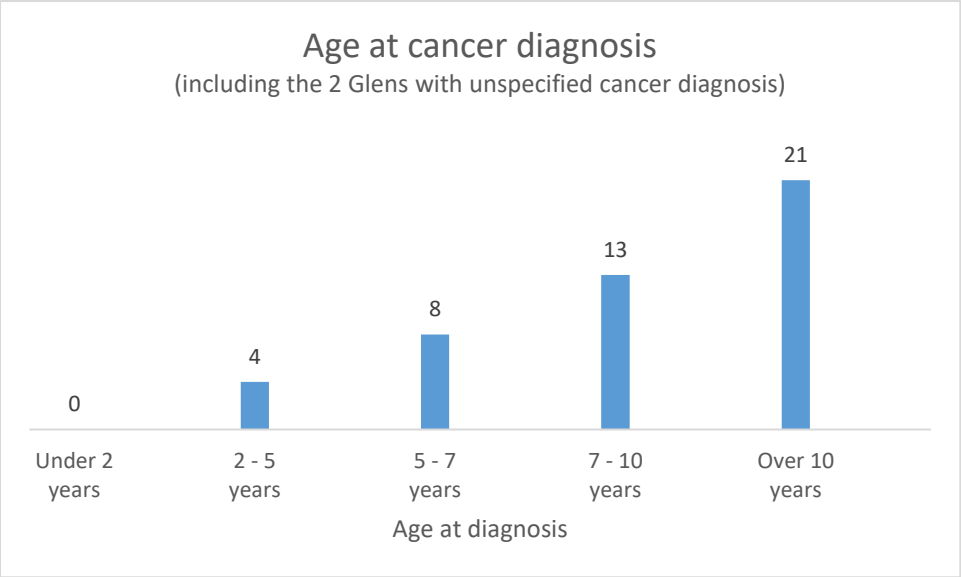
Only 3 of the 38 Glens had no tests and no treatment; all three were euthanised – mammary cancer (7–10 years); anal cancer (7–10 years); lymphoma (>10 years).

16 different types of cancer were reported and there were an additional two unspecified cancers. The most commonly reported cancer was mammary cancer; twelve bitches had mammary cancer, with two surviving the disease twice. Another two Glens developed 2 different types of cancer (one of whom was euthanised at 5-7 years); and one Glen survived 3 different cancer diagnoses.

21 Glens survived their cancer and 17 were euthanised or died.

22 Glens underwent 25 surgeries for their cancer.

4.10 Cancer – cont'd



NB. Some Glens were diagnosed with more than one cancer.

Of the 38 Glens diagnosed with cancer, 21 (55%) survived their cancer and 17 (45%) were euthanised or died.

The 4 Glens diagnosed at 2 -5 years of age all survived their cancer – mast cell; soft tissue sarcoma; mammary (x 2). Three of the eight 7 Glens diagnosed at 5 – 7 years of age were euthanised – lymphoma (x 2); liver & mammary. Six of the 12 Glens diagnosed at 7 – 10 years of age were euthanised – liver; mast cell (x 2); mammary; urethral; anal gland.

Of the 17 Glens who did not survive their cancer, (53%) were under the age of 10 years and 8 (47%) were over 10 years of age.

OFA[2] 72/345 (21%) reported a cancer diagnosis:

Mammary	x 13
Lymphoma	x 7
Mast cell	x 4
Haemangiosarcoma	x 4
Gastric	x 3
Testicular	x 2
Other (unspecified)	x 19
& number of cancers with just 1 Glen diagnosed	x 7

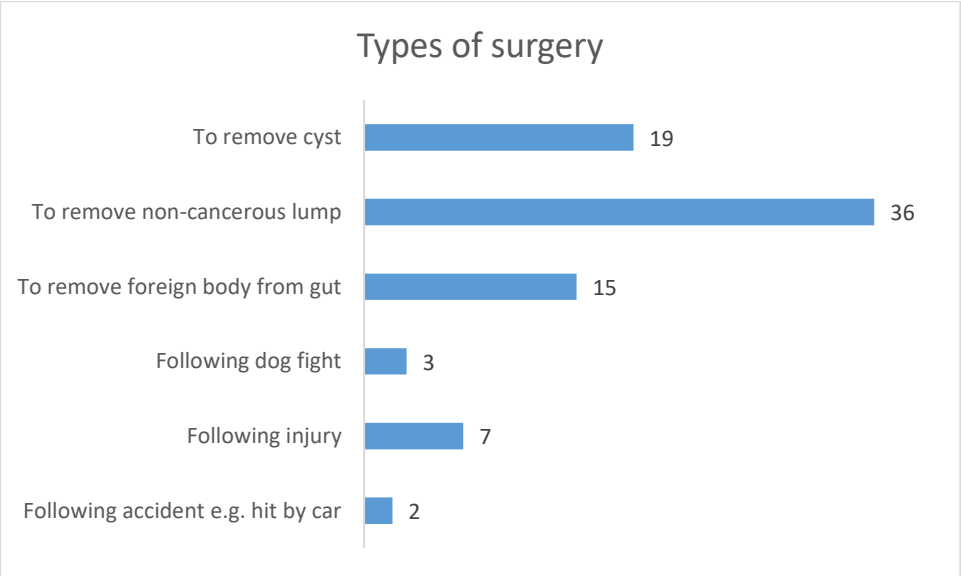
N.B. The OFA[2] numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years

Finland[1] 12/136 (9%) reported (unspecified) cancer

4.11 Surgery

Owners were asked, "*Has your Glen ever had surgery i.e. any operations e.g. for accident or injury; to remove foreign body from gut; to remove cyst or non-cancerous lump?*"

92 surgeries (excluding surgery for cancer) were performed on 67 Glens:



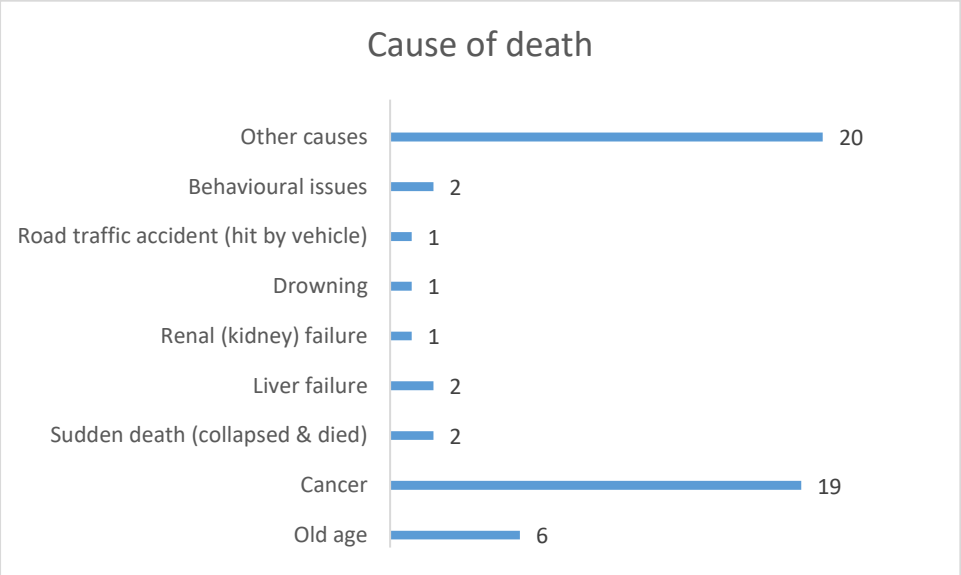
The 10 surgeries not listed in the categories above included: surgery to correct penile frenulum; orchidopexy; removal of infected anal gland; suturing of various cuts; surgery for Infundibular keratinizing acanthoma (twice on the same Glen); tail amputation for Glen born with "*kinked*" tail; unspecified bladder surgery; tooth filing for wry mouth.

OFA[2]	No section on 'Surgery' in this survey
Finland[1]	No section on 'Surgery' in this survey

End of life data

5.1 Cause of death

Owners were asked to *"check or specify the cause/s or circumstances of the death of your Glen"*

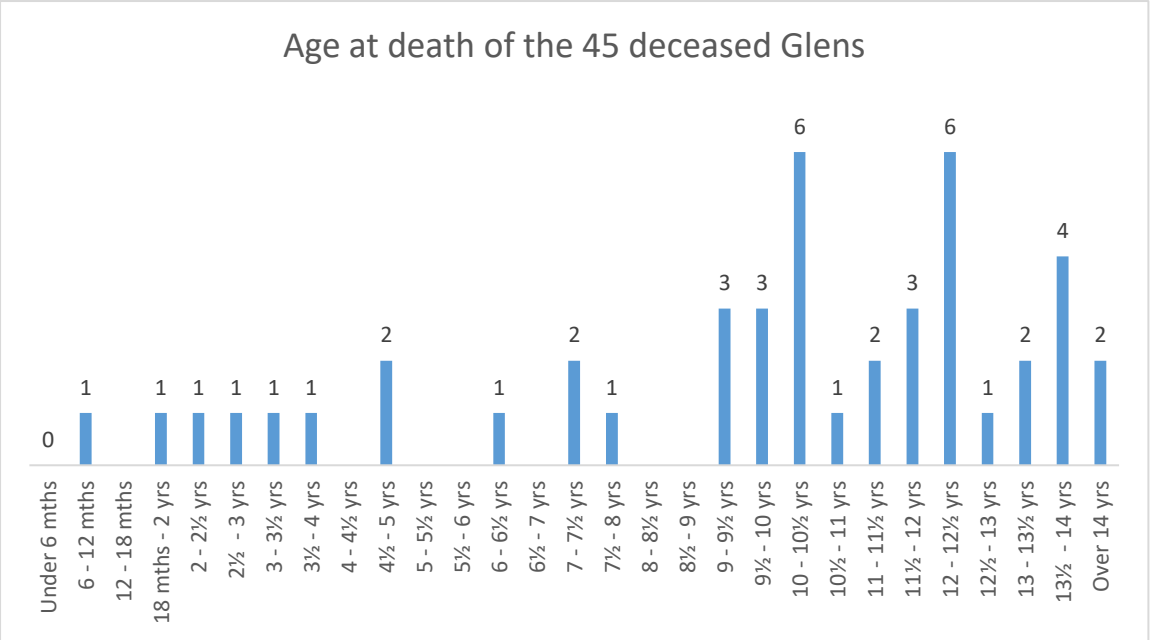


There were 45 deceased Glens whose health, as well as end of life data was included in the survey. Some Glens had more than one cause of death listed e.g. old age and renal failure.

Cancer and old age appear to be the principal causes of death in Glens.

Other causes of death included diabetes (1); encephalitis (1); ruptured splenic tumour (1); Cushings disease (1); granulomatous meningoencephalitis (GME) (1); pancreatitis/IBD/hepatoma (1); acute pancreatitis (1); "pancreas involvement" (1); grand mal seizure (1); septicaemia (1); biliary obstruction, "probably secondary to tumour" (1). One dog died in an unspecified accident. Another dog died during exploratory surgery.

5.2 Age at death



Causes of death in young Glens i.e. up to and including 4½ - 5 years old, were unspecified accident; behavioural issues; encephalitis/GME; acute pancreatitis; drowning; perforated bowel during exploratory surgery.

35 (80%) of Glens were euthanised
4 (9%) had an autopsy performed

- Median age at death in this small cohort was 10 - 10½ years of age, which compares to the overall median age at death of 10 years 4 months for 5,663 deceased pedigree dogs surveyed in the UK Kennel Club's 2014 Health Survey[5].
- Median age at death in the ongoing OFA Health Survey is 10 – 13 years of age (82 dogs)[3].
- No age at death data in the Finnish Health Survey[1].

Comment

The Glen Health Survey provides a "snapshot" of the overall health of the breed. This was a worldwide health survey and we should, perhaps, aim to have international discussion and consensus for the "management" and improvement of Glen health, by health monitoring and education of owners and breeders.

Allergies and skin & gastrointestinal issues

Over the years, anecdotal evidence has suggested that some Glens have allergies and skin problems. Almost one third (30%) of the survey population were reported to have allergies or skin or digestive issues or a combination of these health problems, which can be quite debilitating for the dog and distressing for both dog and owner.

Consideration of environmental factors and diet can help manage allergies but what action can we take to try to reduce the numbers of Glens suffering from these conditions?

Should we be looking at breeding practice?

Of the 130 dogs & bitches that produced litters, 20 (15%) were reported to have allergies or skin conditions or both. It is likely that some of the progeny of these Glens will also have allergies and skin problems.

Should we discourage breeders from using affected animals in a breeding programme?

Foreleg issues

A number of countries have had hip scoring as a pre-breeding requisite, but this survey has shown that foreleg issues appear to be more of a problem than hind leg issues in Glens. There were 2 reports of hind leg lameness reported, compared to 11 reports of foreleg lameness. One Glen was diagnosed with hip dysplasia, compared to two with elbow dysplasia and 5 confirmed cases and one suspected case of premature closure of the distal ulna (PCDU).

Elbow dysplasia and PCDU are painful conditions. Some dogs will require major surgery and prolonged recovery time. Others, for whom surgery may not be appropriate, will require regular pain medication throughout their lives. Some of these dogs will develop painful arthritis.

Is this an emerging health issue for Glens? The percentage of affected Glens is relatively small at around 2% of the survey population, but where do we draw that line above which we become proactive?

The US Breed Club has recently added elbow scoring to the Breeding section of their Code of Ethics … should other countries do the same?

Should breed clubs produce "good practice" breeding advice for relatives of affected Glens, to rule out sub-clinical disease in asymptomatic animals e.g.

- *Do not breed from an affected Glen*
- *Avoid repeat matings where progeny has been diagnosed with ED or PCDU*
- *Elbow score the sire/dam if there are plans to breed from them again & only breed if the elbow score is 0/0*
- *Elbow score any siblings before breeding & only breed if the elbow score is 0/0*

Comment

Bitch fertility

Looking at the bitch data, as well as the successful matings that produced 93 litters, there were also 54 unsuccessful matings that did not result in puppies. Unsuccessful matings represented over one third (37%) of all the matings reported.

It would be interesting to see whether there is an improvement in the number of successful matings at the next health survey …

It might be helpful, in future surveys or surveys specifically looking at bitch fertility data, to collect information about individual matings/breedings and their particular outcomes i.e.

For each mating/breeding, record:

- *Age of bitch at mating*
- *Type of mating e.g. natural / fresh AI / chilled AI / frozen AI / dual sire*
- *No resulting pregnancy (if applicable)*
- *Type of delivery e.g. natural (all pups) / natural + C-section / all pups delivered by C-section*
- *Emergency or elective C-section & reason/s (if applicable)*
- *Number of puppies delivered – survived / stillborn / neonatal deaths*
- *Abnormalities*

Health surveys

Hopefully, as a breed, we can do regular international health surveys once every five years, to identify emerging "health trends" and monitor the effectiveness of any health action plans that are put into place.

Glen of Imaal Terrier Conference

Alongside the World Dog Show in Helsinki in August 2014, the Finnish breed club organised a health conference[8], with speakers from Scandinavia, the Netherlands, the US and the UK, and delegates from all the above, plus Ireland. The presentations included the Finnish health survey results, breeding guidelines in Finland, temperament testing, PCDU, dual sire mating, the Glen-Footprints database[9] and the DNA Archive.

Perhaps the international Glen community can come together again to conduct a second worldwide health survey and then review the results and discuss the way forward at another health conference?

Ongoing health monitoring

The International Glen of Imaal Terrier DNA Archive[7] at the Animal Health Trust (AHT) provides a storage facility for cheek swabs (for future DNA extraction) plus a confidential database of pedigree and health data for every contributing Glen. The archive is in its infancy and needs regular contributions – 5 cheek swabs and copy of pedigree for each Glen – to build up an extensive confidential health database.

Health data stored at the AHT can help identify any emerging health issues and the pedigree information and swabs will enable identification of case and control animals with DNA samples for future health research projects.

Acknowledgements

A big "Thank you!" is extended to all the Glen owners who participated in this breed health survey.

The author of this report is grateful to family, friends and colleagues who kindly helped pilot the survey, to identify and remedy any "blips" before it went live to the Glen community.

The help and support of the following are also acknowledged and appreciated:

Thank you to **Nick Sutton** at the **Kennel Club** for his help and advice when the survey was being developed, and to **Bonnie-Marie Abhayaratne** for emailing the survey out to Glen owners on the KC database, and promoting the survey via the KC website and The Kennel Scope veterinary journal. Thanks too, to the following publications for advertising the survey – the newspapers, **Dog World** and **Our Dogs**; the veterinary journal, **The Veterinary Record**; and the monthly magazine, **Dogs Monthly**. Thank you, also, to everyone who promoted the survey via their Facebook pages.

Finally, thank you to the two UK breed clubs, the Glen of Imaal Terrier Enthusiasts and Fanciers Club (EFG) and the Glen of Imaal Terrier Association (GOITA) for providing links to the survey on their respective websites.

Thank you!

References

(1) Finnish Breed Club Health Survey 2013 : 136 Glens
https://glennit.fi/jalostus/terveyskysely/

(2) OFA Health Survey (ongoing from Oct 2012) : 345 Glens
N.B. The OFA² numbers should be viewed with some caution, as this survey is ongoing and may include multiple (repeat) entries for individual dogs whose health status has changed over the years
https://www.ofa.org/health-surveys

(3) KC/BVA Purebred Dog Health Survey 2004 – Glen of Imaal Terrier report
http://www.efghealth.co.uk/kcsurvey.pdf

(4) Kennel Club Pedigree Breed Health Survey 2014 – Glen of Imaal Terrier report
http://www.thekennelclub.org.uk/media/749407/glen_of_imaal_terrier.pdf

(5) Kennel Club Pedigree Breed Health Survey 2014 – report for all breeds
http://www.thekennelclub.org.uk/media/749028/pedigree_breed_health_survey_-_report_summary.pdf

(6) Kennel Club Pedigree Breed Health Survey 2014 – infographic for all breeds
http://www.thekennelclub.org.uk/media/782751/pbhs_2014_infographic.jpg

(7) Glen DNA Archive
http://www.glenarchive.com/

(8) Glen of Imaal Terrier Conference, Tuusula, Finland – August 2014
https://glennit.fi/jalostus/glenniseminaari/

(9) Glen-Footprints database
http://www.glen-footprints.com/en/database

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