BREED SPECIFIC BREEDING STRATEGY FOR SWEDISH LAPPHUND

Table of Contents

History

The Swedish Lapphund originated among the hunting indigenous people in the northern parts of Scandinavia - in the area named Sapmi in Sami. It is assumed that the Lapphund dog came with the first Sami, when they immigrated as the inland ice was decreasing 9000 years ago. Sami mythology tells us that the Lapphund applied for work among the Sami in return for always being well treated. Primarily the dog has been used for hunting and guarding, but when the Sami people about 250 years ago began to keep reindeer, the repertoire of the Lapphund was expanded to also include working as a herding dog.

Unique Origin

Both historians and archaeologists have since long agreed that the Swedish Lapphund has ancient roots. There are archaeological findings showing that this dog type is very old. The progress of genetic engineering has also shown genetic evidence that the breed is old and has in part a unique genetic background, compared to most other breeds that exist today.

Number One in the First Pedigree Book of SKK

Since Swedish Lapphund always has been regarded as our number 1 national dog, it is not surprising that a long-haired Lapphund - or Nordic Spitz A – was given registration number 1 in the first volume of the SKK Pedigree Book in 1893. The dog was born in 1884 and owned by forester Hugo Samzelius, the SKK secretary - a significant name in early Swedish cynology. In 1935 the standard for Lapland Spitz was approved by SKK. In 1936 the pedigree book contained 85 Lapland Spitz dogs, but after that there was a decline in the breed during a few decades, with only around some twenty registered dogs per year. During this time there were a number of colors and combinations of colors of the Swedish Lapphund. Type-wise those dogs were of unmistakable Lapphund type, but in detail they varied quite a lot. Among other things, bobtails were allowed and a rich variety of colors. In the 30s the white colored variants were of complete dominance and even competed as a separate breed for a period of time. Much later it was decided to remove the white color variant from the breed standard, as many of the white Lapphund dogs apparently had Samoyed background.

I the first pedigree book of SKK you will find Lapphund dogs. The dog in the image was called Tubbe (reg.nr S.K.K. #2). Tubbe was born with a bobtail, which is also noted in the pedigree book!

50s and 60s

In the 1950s Baron Carl Leuhusen took the initiative to save the Swedish Lapphund breed and was a significant force, as he together with Mary Stephens reconstructed the breed. In Gotland they found the Lapphund male Roy from Forserum and the female Ulla from Hedemora, these two can be said to be original dogs of the Swedish Lapphund breed. In accordance with the breeding methods of the era Mary Stephens built her stock of Lapphund dogs on two siblings by Roy and out of Ulla, namely Musti and Tjappa. In the 50s and 60s, there were around 10 kennels, the largest were Stråhles, Snöstjärnans, Odds, Renfjällets, and in general all of the dogs were very closely related, i.e. Roy's and Ulla's sons and daughters which were mated with each other or similar kinship mating. During the 50s an average of 28 puppies/year were registered, but already in the 60s, it had increased significantly to 128 puppies/year.

The Boom in the 70s and 80s

The 70s were the absolute peak years with an average of 305 puppies; 1973 we noted the highest registration number in the history of the breed with 368 puppies. The total level of inbreeding these years was at 6,2%, which means that all the litters on average in those years had an inbreeding degree corresponding to cousin mating. It was in the 70s we had our most used breeding matador, Renfjällets Älm, with over 280 puppies. In the 80s, we had 250 puppies a year, those were also the years we had the highest inbreeding level, 8,1% was the average inbreeding coefficient throughout the decade. In 1984, the average degree of inbreeding was as high as 10,6%. We had four breeding matadors with over 100 puppies each in the 80s and 90s, whereof two were children of Älm and one was a grandchild.

The First Effect of the Severe Inbreeding Emerges

Hereditary Juvenile Neuronal Muscle Atrophy (JNM) appears in the breed, most of the cases occurred in the late 60s and beginning of 70s. Test mating was initiated in 1973 being observed by a committee appointed by SKK. Litters were checked at 2 and 8 weeks of age, respectively, and all test litters were euthanized after the last checkup. In 1993 an unknown litter with JNM was documented by a veterinarian with extensive knowledge about the disease. The reason why the litter is unknown to SLK is that the breeder never reported the case. Registration ban of offspring from a carrier of the predisposition for JNM is effective as of 1980-07-01 (see also page 14). During this time also most cases of Type II Glycogen Storage Disease (Pompe’s Disease) are documented (see also page 14)

The Decline Starts in the 90s

In the 90s the registration numbers were plummeting down to an average of 162 puppies/year. A major contributor to the decline was that the Finnish Lapphund, of which a few specimens earlier existed in Sweden, began to increase in registrations. During this decade we invited geneticist Per-Erik Sundgren to a breeder’s meeting and breeders learned that it was not only beneficial to inbreed/line breed so there was less inbreeding, the inbreeding degree was on average at 5,95%. Also during this era there were matador males, but these did not have as many puppies as in previous decades. Registration ban of offspring from parent animals lacking official hip joint status before mating, became effective as of 1990-01-01 (see page 15).

The 2000s, PRA Created a Different Way of Looking at Breeding
In the 00s the registration numbers plummeted further down to end up on an average of 110 dogs per year. One explanation for this was that several large breeders for various reasons ceased with their breeding of Swedish Lapphund. A change in the way of breeding, where more different breeding males were used for breeding and the level of kinship was taken into account, reflected the fact in the total level of inbreeding which fell to an average of 2,71%. In 2006, a genetic test for the eye disease Progressive Retinal Atrophy (hereinafter PRA) was introduced. The recessive predisposition for the disease was initially found in about 75% of the breed. Only one quarter of the dogs tested were free. Due to the wide spread occurrence within the breed, the Swedish Kennel Club introduced a health program 2008-01-01 where known status of prcd-PRA was required for the parent animals and a breeding ban for sick dogs (see page 17). Funds were allocated from the Swedish Kennel Club and the Swedish Lapphund Club to subsidize genetic tests regarding prcd-PRA. The money was also used to investigate the nature of the disease by eye-screening affected dogs. In addition, the number of puppies from individual males was limited to 25 puppies to prevent matador breeding on certain males.

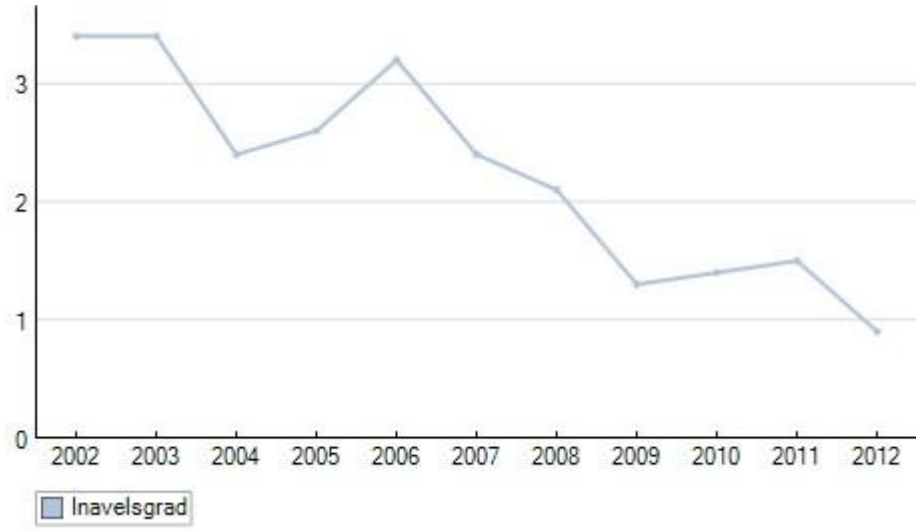
A SPECIAL BREED, A SPECIAL SITUATION

It is important that we all understand that the Swedish Lapphund with its small numerical population, which is largely found in Sweden and Norway only, *is* a threatened breed. All Swedish Lapphund puppies being born are potential breeding animals. In order not to contribute even more to the number of breeding animals decreasing, puppies should be genetically tested for prcd-PRA before being delivered to their owners. It is also important to have an ongoing dialogue with puppy buyers to make them understand that also their puppy can be an important piece of the puzzle to preserve the Swedish Lapphund. Therefore, it is important that the breeder distinctly clarifies for the puppy buyer that neutering is not only negative for the individual (ruined coat, incontinence risk, behavioral changes) but is also one of the biggest threats to the breed as we lose important breeding animals. It is also important that as many dogs as possible get their hip joints x-rayed, not only for their own assessment, but because they are potential new breeding animals.

INCREASED GENETIC VARIATION – TOP PRIORITY

It is of great importance to maintain the genetic variation of the breed. Targeted work to reduce the inbreeding degree in each individual combination has begun and has given a positive result. In the previous edition of RAS from 2005, a goal was set that the average inbreeding degree for all litters born each year should not exceed 2,5% (calculated over 5 generations, i.e. 0,5% per generation). This goal was reached already in 2004 and since 2007, the average inbreeding degree has remained steadily below 2,5%. In 2009 and beyond, the average inbreeding degree has fallen below 2%.

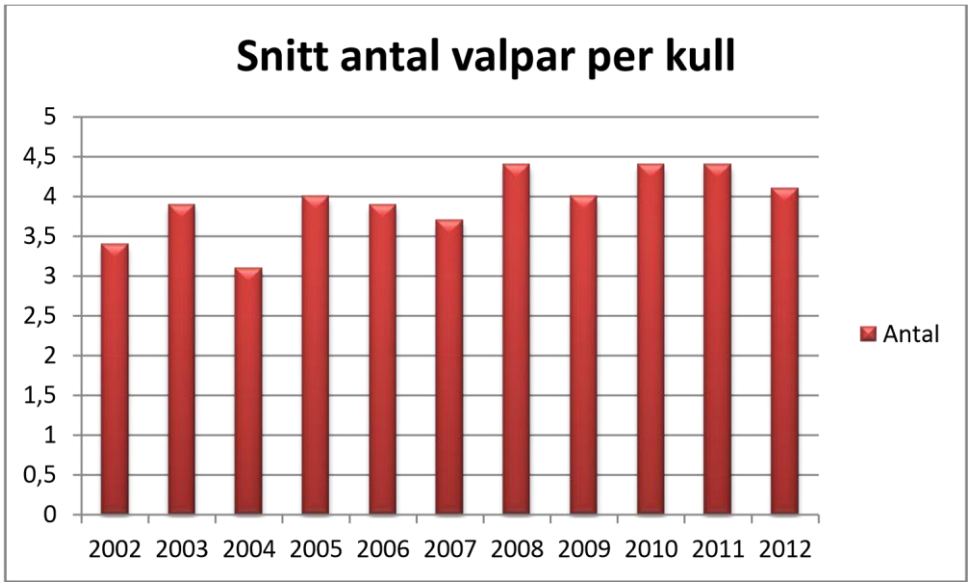
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Inbreeding degree	3,4 %	3,4 %	2,4 %	2,6 %	3,2 %	2,4 %	2,1 %	1,3 %	1,4 %	1,5 %	0,9 %



Average inbreeding degree per year of birth (calculated over 5 generations), taken from the SKK Breeding Records (Avelsdata).

	Kullar födda										
Fördelning parningar i %	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Upp t.o.m. 6,25%	28	31	29	29	22	18	18	23	19	17	17
6,26% - 12,49%	4	4	1	2	0	1	0	0	0	0	0
12,5% - 24,99%	2	1	2	1	2	0	0	0	0	0	0
25% -	0	0	0	0	0	0	0	0	0	0	0

A clear trend can be observed that breeders in recent years have avoided making combinations with higher inbreeding degree than 6,25%



Once the level of inbreeding has declined, the litter size has also begun to rise, which is a health mark for our breeding of Swedish Lapphund.

The Genetic Variation

According to geneticist Erling Strandberg, we have increased the effective population size in recent years. This means that the inbreeding growth in the breed has decreased. This does *not* mean that the genetic variation has increased, but it has decreased to a lesser extent than before.

Relationship Values

Every year we get a great tool from SKK/SLU regarding the genetic variation and that is the relationship list. It is published on the club website www.slk.nu. All dogs have a number in it indicating how much they are related to the rest of the population. A dog with a relationship value of 100 is the average dog. This number indicates that dogs over one hundred are more related to the breed than the average and dogs under 100 are less related to the breed than the average. This figure changes from year to year depending on how much the dog itself or its close relatives have been used for breeding. In order to get as accurate a picture of the breed as possible, we consider all Swedish Lapphund dogs in the Nordic region as one population, most of them are in Sweden and Norway. Consideration is taken to this when the relationship values and inbreeding degrees are calculated (both Swedish and Norwegian dogs are included in the calculations of relationship values).

In order to increase the genetic width, we therefore need to get as many litters as possible, where the relationship degree is as low as possible, preferably below 100. The relationship value of the litter is calculated by adding the relationship parental value of the intended parental animals to each other, and then divide this by 2. If e.g. the female has a value of 102 and the male at 98, their values are added (102 + 98 = 200) the sum is then divided by 2 (200/2 = 100). The puppies then have a relationship value of 100.

Age at Breeding Debut

At the breeding debut, the breeding animal should be at least 2 years old and must not have more than two litters per year maximum. According to Swedish law, a female must not be younger than 18 months at mating. Older breeding animals are preferred to younger ones. An older dog has already shown its strengths and weaknesses. A young dog has rarely developed e.g. genetic diseases. Using a young dog in the breed is thus more of a gamble. The use of older dogs in breeding furthermore extends the generation gap and delays the loss of genetic variation (provided that these dogs have not already produced several litters, see Use of Males below).

Use of Males

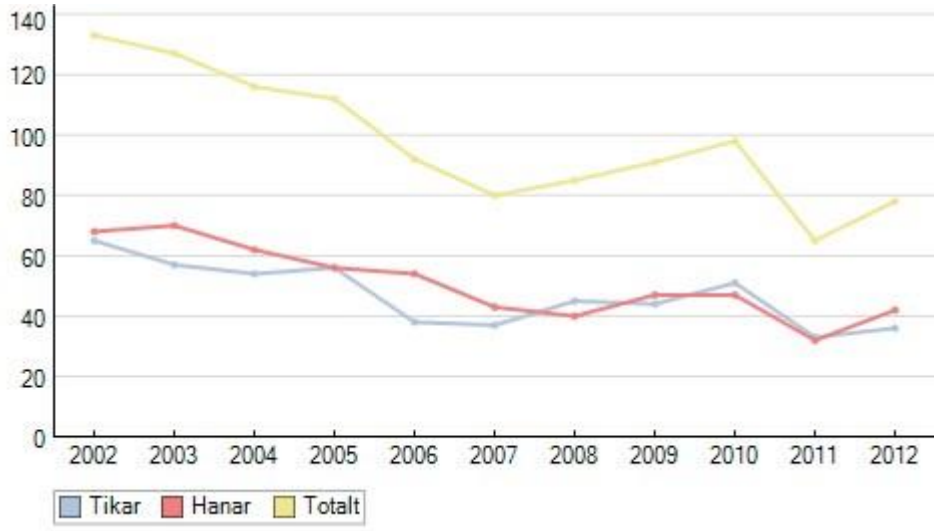
An important rule of thumb regarding the use of individual males (or females) for breeding is that a breeding animal should never produce more than 5% of the offspring in one generation (assumed 5 years). The number is calculated by summing the registration numbers of the last 5 years (79 + 93 + 83 + 74 + 69 = 398) and multiplying them by 5% (398 x 0.05 = 19.9). In 2013, this estimate will result in about 20 offspring as a maximum. Please note that this is a maximum limit, within the breeding of the Lapphund we must today strive to use as many breeding animals as possible, which in practice means that each breeding animal cannot produce that many offspring (unless the registration numbers are pointing strongly upwards). The recommendation is that no breeding animals should have more than 15 offspring during their lifetime. Evaluation of the offspring, with regard to health and mentality, should be done after 2 litters, and is done by a mental description/BPH as well as hip joint radiology. According to the SKK Registration Rules, there is a ban on the progeny of male dogs with 25 or more offspring (as of 2008-01-01).

Use of Females

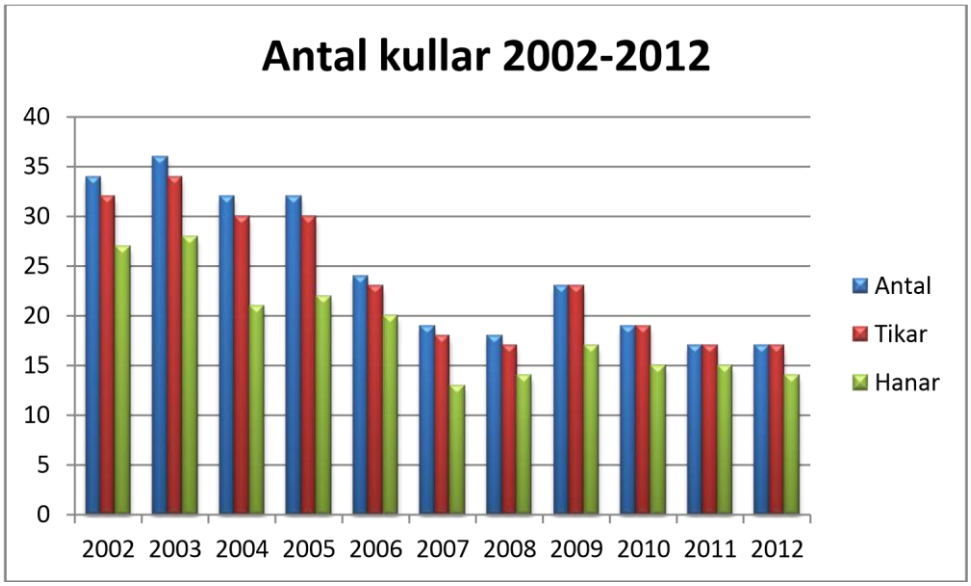
It is important that also a female does not produce too many offspring. The recommendation is that no breeding animals should have more than 15 offspring during their lifetime. According to the SKK registration rules, no female is allowed to produce more than five litters during its lifetime. Evaluation of the offspring with regard to health and mentality should be done after 2 litters, and is done by mental description/BPH as well as hip joint radiology.

More Registrations

To maintain the genetic variation it is of the utmost importance that more litters are born and that more different females and males are used for breeding. As a breeder, you can help in a positive way by showing and promoting the breed, with the aim to increase its popularity.



Number of registrations during 2002-2012



Objectives – Genetic Variation

Continuously maintain a low inbreeding degree (below 2,25%) and actively work to get more males and females into breeding. We will accomplish this through information in the magazine and on the website. We will also have breed meetings around the country to inspire and help those, who are thinking of taking a litter from their bitch, but also have a constant dialogue between those, who are interested in the breed.

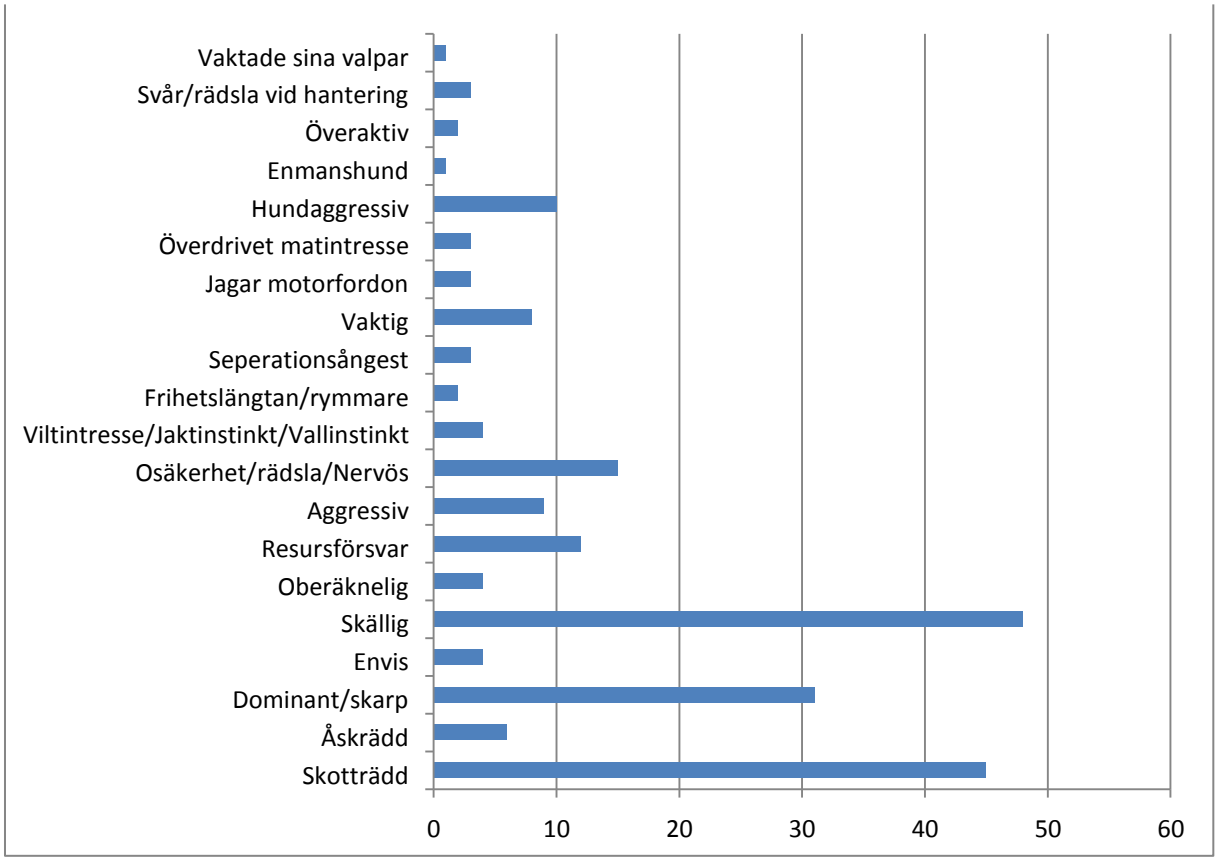
Try to reach the goal of 150 registered puppies per year until 2017. To reach the goal of an increase in registered puppies, we must ensure that there is demand for our puppies, this through an increased PR for the breed. A separate PR committee has been set up for the Swedish Lapphund in SLK-CS, which will make our breed more visible to the public.

Potential Strategy for the Future

There is no doubt that the breeding base for the breed is limited. One possible way to ensure long-term and sustainable breeding can be the introduction of another breed, which would broaden the gene pool. Which breed would be most suitable is far from obvious, but currently SKK is financing a project to collect and analyze DNA from a population of dogs found in northern Russia. The purpose of the project is to find out how similar these dogs (Normadic Nenets Reindeer Herders) are to the Swedish Lapphund and if they could be a suitable candidate for a future potential cross-breeding.

MENTALITY

In 2012, AK sent out a survey to all owners of Swedish Lapphund (about 660, of whom about 350 responded). The responses we received on how the dog owner perceives the dog's mentality is alarming. Along with genetic variation, good mentality must be the main priority in breeding. Of 163 male dogs, 18 were neutered on account of behavioral reasons. 7 were euthanized for behavioral reasons. This means that 15% of the male dogs had such serious behavioral faults, that the dog owner felt obliged to neuter or euthanize the dog. The majority of these dogs showed aggression or great dominance against their family. In the questionnaire it was also asked "Is your dog's behavior as you expect from the breed". There, the largest majority answered Yes (94%). On the question "Have you experienced anything in the dog's behavior as problematic," 34% responded Yes. The most common problematic behaviors, according to the dog owners, are gun shyness/fear of thunderstorms, dominance and excessive barking. For a more detailed report, see: www.slk.nu (under Swedish Lapphund).



Today there are two different ways of assessing and checking a dog's mentality. Dog Mentality Assessmen (MH) and the new Behavior and Personality assessment in dogs (BPH). During the years 2001-2011, 89 Swedish Lapphund dogs were described, i.e. about 13% of all Swedish Lapphund dogs born during the period were mentally assessed.

The picture we get from the mentally assessed dogs is different from the one given us by the surveys. The described dogs are on average just like we want a Swedish Lapphund. They are social, curious and courageous with low aggressiveness. One thought may be that there are some lines/kennels that have been described to a greater extent than others and that the dog owners, who described their dogs may also be dog owners, who are more active and train their dog in a different way than the average dog owner we reached with the health survey.

Only dogs with stable and good mentality should be used for breeding. The dog should not be excessively afraid nor have aggressive tendencies. Dog Mentality Assessment (MH) and BPH (Behavior and Personality assessment in dogs) are very good tools for evaluating a dog's mentality and should be used to a much greater extent than today. To get a complete picture, of course, it is obviously important to also consider how the dog functions in everyday life.

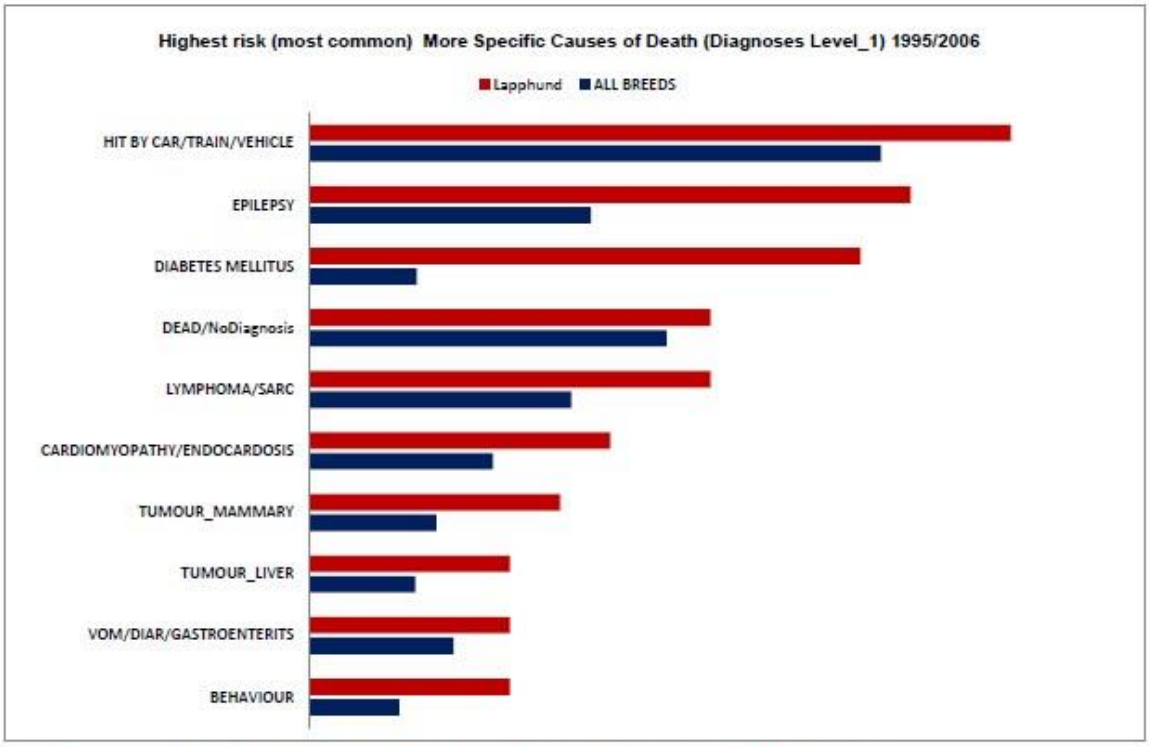
Objectives - Mentality

To increase the number of officially described dogs (MH/BPH) to 20% of those born during the period 2013-2017. To reach that goal, we will assign a mentality group, which will, among other things, book days at the various BPH facilities that exist/will exist around the country. We will also have information on this in the magazine and on the website.

Values of characteristics for mentally described dogs (MH) between 1990-2011 :
Curiosity/Fearlessness 3,6
Aggressiveness 1,9
Sociality 3,6
Hunting Interest 2,2
Playfulness 3,0

HEALTH

In the health survey we sent out in 2012, we did not see anything alarming as regards diseases. This means that today we do not see that we need to be wary of any particular disease. We have occasional cases of Addison and according to the report we received from Agria in the Agria Breed Profile (see below, please note that it applies to the period 1995-2006!) We are a bit high in cancer cases. This is something we may have to keep in mind until the next revision of RAS. It is of course important that we only use clinically healthy breeding animals so that we can keep the breed as healthy as we believe it is today.



NOTE: 'UNS/VAR' indicates that various and/or unspecified diagnoses were combined in this category.

HIP DYSPLASIA

The SKK Health Program for Swedish Lapphund
Parent animals shall be hip joint x-rayed (so called known status) and ID tagged, otherwise the registration ban of offspring (from 900101) will apply.

HD Follows a Polygenic Inheritance.
In the case of polygenic (quantitative) inheritance (i.e. the impact of many genes and environmental factors), in addition to the individual's own results, information on the family (closest relatives) is important to take into account in the breeding evaluation. The presence of HD throughout the family is checked. How big of a risk it is that a certain dog inherits HD cannot be established, only estimated. The more animals being x-rayed the safer selection of breeding animals.

Frequency of Hip Joint Dysplasia (HD)
During 2002-01-01 to 2011-12-31, 979 dogs were born, of these 462 (47%) were hip joint x-rayed. The average age at x-ray has been 21 months.
For dogs born during this period, the distribution of the HD degree was as follows: Grade A 35%, Grade B 36%, Grade C 22%, Grade D 6%, Grade E 1%. This means that 71% had grade A or B and as many as 93% have A, B or C. So, currently the HD grade is not the greatest obstacle for breeding, but the fact that too few dogs are x-rayed.

Parent animals diagnosis at the mating situation

	Kullar födda										Parent Animal
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Kombinationer	2	5	5	6	4	2	2	4	5	2	6	
HD grad A HD grad A												
HD grad A HD grad B	2	9	11	11	7	7	7	7	6	5	5	
HD grad A HD grad C	4	2	1	3	2	1	2	4	3	1		
HD grad A HD ua	5	6	6	1	1	1		1				
HD grad B HD grad B	1	2	1	6	2	3	5	3	2	7	4	
HD grad B HD grad C	1	1	1		3	2	1	3	2	2	2	
HD grad B HD ua	6	4	6	2	1	2						
HD grad C HD ua		3		1								
									HD ua		HD ua	
6	3			1								
				okänt		HD grad A						
	1		2		1		1					
	okänt		HD grad B		1		1		1			
					1		1				u	
HD grad C			1				1					
							okänt		HD ua		3	
1					1							
			okänt		okänt							
	1											

Breeding Recommendation regarding HD

The ability to make a risk assessment as accurate as possible regarding HD, increases with the number of x-rayed relatives. Therefore, it is important not only to x-ray the breeding animals, but as much of the breed as possible. It is a breeder's responsibility to have their litters assessed and thus also HD x-rayed. In view of the narrow breeding base, no, otherwise valuable dogs with C-hips, can be excluded from breeding. If a dog has a relationship value below 80 at mating, a dog with D-hips may also be considered (provided that it does not have any clinical problems with its HD). Dogs with HD degree D, however, must not be mated with other dogs whose HD degree is worse than B.

Note that there is an opportunity to apply for an exemption at SKK for the use of un-x-rayed but genetically important dog (relationship value below 80). Given that the breed has other prioritized issues (genetic variation and mentality) than HD, this is an opportunity, which the club is looking positively at, as a measure to broadening the breeding base.

Objectives - HD

Too few Swedish Lapphund dogs are HD x-rayed today. The goal is to have significantly more dogs x-rayed. During the 90s, 40% of all registered dogs have been HD x-rayed. For dogs born in 2002-2011 the figure was 47%. Our goal is to have more than 60% of the dogs x-rayed until 2017. In order to achieve this goal, it is very important to reach out to the new puppy owners with information *that* the dog should be HD x-rayed and *why*. The breeders, of course, have an important role here, since they usually have repeated contacts with their puppy buyers. Information should also be communicated via the website and the membership magazine at least once a year.

EYES

Progressive Retinal Atrophy (prcd-PRA)

The typical disease progression is that the dog first gets a reduced night vision and later on also lower vision in the daylight, to finally lose sight completely. The dog is usually relatively old before the disease is discovered. There is no cure, only planned breeding can affect the occurrence of the disease. Within the Swedish Lapphund breed there is a variant of PRA called prcd-PRA. The disease is inherited autosomal recessively, which means that both parental animals must have the predisposition for an offspring to become affected. SLK has eye-screened affected dogs, and through this work it has been established that the dogs affected, by genetic test (have inherited disease from both of their parents) will sooner or later develop clinical prcd-PRA.

When the genetic test came in the spring of 2006, we had had around 10 sporadic cases of PRA ascertained through eye screening in both Sweden, Norway and Finland. During 2006, 24 Swedish Lapphund dogs were genetically tested with the result 2 prcd-PRA A/Normal, 15 prcd PRA B/Carrier and 7 prcd-PRA C/Affected. That is, only 8% of the dogs tested were completely free from the predisposition. During 2007, 181 dogs were tested and puppy litters were also tested before delivery.
Although the numbers were more positive than the first in 2006, the situation was alarming. 24% were affected, 51% carriers and only 25% were free. Many of those, which were free were closely related to each other.

Looking at the latest generation (2008-2012) born during the years the health program has been around, the situation looks better. Of the 398 dogs registered during this period of time, 346 (87%) had known prcd-PRA status, 54% were prcd-PRA type A, either by genetic test or inheritance, the remaining 46% were prcd-PRA type B. So in one generation only, the situation has improved significantly and dogs who are not carriers of the prcd-PRA predisposition have doubled.

Breeding Recommendation regarding prcd-PRA

prcd-PRA type A/Normal may be mated with prcd-PRA type B/Carrier (predisposed). The puppies from such a combination should be genetically tested before delivery. prcd-PRA Type A and prcd-PRA Type A may be mated with each other and the offspring will be hereditary free. Dogs with prcd-PRA type C/affected may not be used for breeding. prcd-PRA Type B/predisposed must always be mated with type A/normal.

Currently, as genetic diversity is prioritized in the breeding of Swedish Lapphund, a combination of two prcd-PRA type A dogs should only be done if the combination gives a relationship degree of about 100 or below.

Note that there is an SKK Health Program for Swedish Lapphund, as regards prcd-PRA. Registration ban for offspring by parents, which are not officially DNA tested for prcd-PRA at an SKK approved laboratory or are hereditary free. The data must be noted in the SKK Veterinary Registry. In accordance with the SKK basic rules, valid results must be present before mating. (as of 2008-01-01).
Just like with HD, however, there is an opportunity to apply for an exemption from SKK for the use of an untested, but genetically important dog (relationship value below 80).

Objectives – prcd-PRA

Thanks to the introduction of the health program in 2008 and the fact that breeders, to a large extent, have tested not only the breeding animals, but also the puppies, we have today a very good perception of the situation. Most important is the fact, that *no* sick puppies are being born. The long-term goal is, of course, to remove the disease gene, but we can & will hurry slowly. However, the frequency of the prcd-PRA allele will gradually decrease. One may therefore safely continue to use carriers of the disease gene (prcd-PRA B/Carrier) for breeding, but of course only mate with a dog free from the predisposition (prcd-PRA A/Normal).

OTHER

Both of the diseases described below are diseases previously described in the breed, but we have no reported cases for at least 20 years. The frequency of the disease is noted as non-existent to very low in our breed today. The reason we still have them in RAS is that they are two extremely serious diseases, and it is important that dog owners and breeders of the breed are aware of them, if any new cases would still emerge.

Juvenile Neuronal Muscle Atrophy (JNM)

Juvenile Neuronal Muscle Atrophy is a disease that is only documented in Swedish Lapphund. Especially in the 70s, test matings were made to find those who were free and those, which were carriers of the predisposition in the breed. This work reduced the frequency to today's most likely extremely low frequency of the disease gene in the breed. The disease caused the muscles to wither in puppies, which had not yet reached 8 weeks of age. The disease is inherited autosomal recessively, which means that both parental animals must carry the predisposition for an offspring to be affected. There is today a health program for Juvenile Neuronal Muscular Atrophy, introduced in 1980, which imposes a registration ban on the offspring of carriers of the predisposition of Juvenile Neuronal Muscle Atrophy. A dog having a sibling, which has incurred JNM, is noted as a carrier of the predisposition. Since there are no known cases of JNM since 1993, the club will apply for this program to be removed.

Type II Glycogen Storage Disease (Pompe's Disease)

Pompe's Disease is a hereditary disease which is autosomal recessively inherited, which means that both parental animals must carry the predisposition for an offspring to be affected with symptoms. Pompe's Disease is both a metabolic disease, a glycogen storage disease and a lysosomal storage disease. Pompe's often has an early onset, and affected dogs usually do not get older than 1,5 years of age. Symptoms are weight loss, stomach problems, vomiting, inflamed tonsils. In late stages of the disease, e.g. panting and weakening of the heart may occur.

The disease is documented in the breed with about 15 reported cases in the 60s and 70s as well as single cases in the 80s and 90s. Thereafter, no new cases have been reported directly

to SLK or via the Health Survey in 2012. No cases are listed in insurance companies' reports. However, in the winter of 2012, 34 Swedish Lapphund dogs of various lines were gene tested by private initiatives, and all dogs were found to have normal status, i.e. no one was carrying the defect causing Pompe's Disease. All in all, no recommendations are required for general gene testing before breeding from Swedish Lapphunds and there is also no reason for a health program for the disease.

EXTERIOR

Currently, we must prioritize other than the exterior in the breeding work. The breed's narrow breeding base provides no room for selection on exterior details, as long as these do not affect the dog's health and well-being. Variation within the breed frame is only positive and suggests gene variation in the breed. Within the club, however, one should monitor the development within the breed regarding the following issues:

- Bones must not be too weak
- Ideal size, 43 cm for bitches and 48 cm for males
- The head stop must not be too flat, and the ears not too large and the width of the head must not be too narrow.
- Gender type is maintained.
- Eye placement and shape. Must not be almond shaped, oblique or too close
- That the movements remain good
- The coat length - not too long and soft in the quality. A dog working in different weather conditions must have a purposeful coat

We do this by evaluating show critiques, these are available in the yearbook or on the website. As a whole, we have a well-built, proportional and functional breed, that is soundly built for the work it originally was bred for. The movement has improved considerably, cow-hocks occur to a lesser extent.

Prior to the next revision of RAS, the club should evaluate if, and in that case, in what way, the above characteristics have changed during the five-year period. The evaluation can then provide a basis for the priorities to be made in the next RAS.

TO CONSIDER WHEN BREEDING SWEDISH LAPPHUND

Genetic variation *is* necessary to enable the breed to withstand diseases both now and in the future. To lose as little genetic variation as possible, one should:

* Use more animals for breeding.

* The calculated family relationship degree for the combination should be a maximum of 105, preferably below 100.

* Use as many males as females

* Not let any dog produce too many offspring (5% of a generation) or grandchildren (5% of a generation?)

* Not use too many close relatives for breeding.

* The same mating combination must not be repeated.

* Higher inbreeding degree than equal to cousin mating (6,25 percent) should not be done. At a higher degree than 2,5%, the calculated relationship degree of the combination must be below 100.

Priorities

In such a small population as the Swedish Lapphund, there is a very limited room for breeding selection, if any. In order for the Swedish Lapphund to survive as a breed, we must make the correct priorities. We agree that we must prioritize away getting into detail in the selection of our breeding animals. The following priorities describe how we as breeders should prioritize in our breeding, i.e. how to think prior to each combination we plan to do. The most important thing is to meet priority 1 (see below) as much as possible in all litters, this of course with priority 2 in mind. Priority 3 is a matter, which we currently do not have room for to emphasize in the selection, but which should be paid attention to for the future only, when the situation in the breed has hopefully improved.

Priority 1: Low relationship degree and maintained low inbreeding degree, this combined with good mentality.

Priority 2: Healthy animals, naturally we adhere to existing rules, but we need to e.g. breed on dogs with HD degree C and, in some cases, even D hips, if they add to Priority 1.

Priority 3: Maintain movement and correct fur as this is important in order for them to be able to work in their native environment.

All matings made on Swedish Lapphund are important for the survival of the breed. It is important that you as a breeder ask yourself why you have chosen to make a certain combination. Is it really in accordance with the priorities above, i.e. a low relationship degree, low inbreeding and a good mentality. We have no way of considering exterior details at this point.

Do not waste the female’s mating on, for the breed, less good combinations. Relationship value is not just a figure on a piece of paper, but it indicates how common a dog's pedigree is in the population.

Prior to the next revision of RAS, the club should evaluate if, and in that case, in what way, the above characteristics have changed during the five-year period. The evaluation can then provide a basis for the priorities to be made in the next RAS.