

FINNISH KENNEL CLUB (KENNELLIITTO): BREEDING STRATEGY TEMPLATE FOR BREEDS WITH LARGE POPULATIONS

This guideline is intended to be used by breed clubs for breeds in which at least 250 dogs have been registered over the last five years. **The template outlines the content and structure for the Breeding-specific Breeding Strategy Document (JTO).** The recommended total length of a breeding strategy for these breeds is 25-30 pages.

Contents of breeding strategy

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1. SUMMARY

Present about one page as a summary of the breed-specific breeding strategy's key points. The aim is to briefly highlight the breed's most significant breeding-related challenges and key recommendations for selecting breeding dogs. The goal is for the summary to provide, even to readers unfamiliar with the breed, the key points of the breeding strategy in a nutshell; the motto could be “read at least this”.

2. BREED BACKGROUND

In this section, briefly describe the origins of the breed and its development into its present form as well as the breed's history in Finland. The intention is not to examine the breed's history in detail, so only provide a 1-2-page account of issues relevant to breeding and keeping these dogs.

- What use / purpose was the breed originally bred for? Is the breed's use / purpose different in some countries?
- Closely related breeds that have a shared development history?
- Has the breed divided into separate lineages (working and showing for instance)? If so, when did this happen?
- When and how did the first dogs of this breed come to Finland? How did breeding commence and the number of dogs develop?

3. BREED CLUB ORGANISATION AND ITS HISTORY

In this section, briefly describe the breed club organisation for this breed and its history, and examine how it has steered breeding. The section should also go over the responsibilities of the breed's breeding committee.

4. CURRENT SITUATION OF BREED

The current situation of the breed can be analysed with the aid of the Finnish Kennel Club's breeding database or the breed club's own databases. If the genetic diversity of the population or breed has been the subject of scientific research, the findings of such studies can also be briefly represented here.

4.1. Population structure and gene pool

4.1.1 Population structure and inbreeding

Table 1. Annual statistics – registrations

Include the numbers of annual registrations for 10 – 15 years derived from the breeding database here, including:

- Number of annual registrations for the breed
- Annual number of imported dogs
- Average age of breeding males and females per year (this can serve as an estimate of the average generation interval of the breed)
- Mean inbreeding coefficient of the breed per year

The section should also briefly explain to the reader what the terms *inbreeding* and *inbreeding coefficient*

mean (template text available from the Finnish Kennel Club website).

If the breed has separated into distinct lineages (e.g. show/ working), this section can also provide, to the extent possible, information on the annual registration figures of each lineage and mention whether dogs from different lineages are mixed with each other for breeding purposes or are maintained as separate.

The table should be analysed with respect to at least the following:

- What are the breed's registration figures in Finland? Are registrations rising or falling?
- Is the age of the males and females used for breeding this breed rising or falling? What will this mean (using very young dogs is always risky especially from the health perspective)?
- Is the breed's inbreeding coefficient too high? If yes, what does this mean for individual dogs and the entire breed? A recommended upper limit for the inbreeding coefficient is included in the template text on the Finnish Kennel Club website.

4.1.2 Gene pool

Table 2. Gene pool per generation (4 years)

- Generation-specific number of males and females used for breeding
- Sires/dams ratio, i.e. the ratio between the number of different sires and dams per generation
- Percentage share of sires and dams used for breeding in overall number of births per generation
- Effective population size per generation

The table should be analysed with respect to at least the following:

- Is the breed's effective population size rising or falling?
- Sires/dams ratio, should it be raised? The closer the ratio is to one, the more evenly the breeding use of sires is spread. The more evenly sires are used for breeding, the more effectively the breed's genetic diversity can be retained.
- What proportion of the breed's males and females are used for breeding? Are these proportions large enough? When these statistics extend to the recent years, please keep in mind that many dogs from the youngest age cohorts have not yet started their breeding career, so these percentages will rise in the next few years.

Table 3. 15-20 males used most for breeding during the last 10 years

- Names and birth years of these males
- Overall number of litters and puppies
- Number of second-generation descendants

Also mention how many males were used to produce 50% of the puppies in the period under review.

Table 4. 15-20 females used most for breeding during the last 10 years

- Names and birth years of these females
- Overall number of litters and puppies
- Number of second-generation descendants

To the extent possible, mark dogs that represent distinct lineages (e.g. show/working) in the breed in the table by, for example, using italics or bold for emphasis.

The tables should be analysed with respect to at least the following:

- How do the figures on the use of breeding dogs look? How many descendants do the most-used dogs have relative to the number of registered dogs in the last four years? Have some dogs been

used excessively relative to the population size? Do some dogs have too high numbers of second-generation descendants?

Example: the aggregate number of registrations over ten years is 10,000 dogs, so on average 4,000 dogs will be registered over four years ($10,000 / 10 * 4 = 4,000$). The recommend maximum amount of descendants in breeds with large populations is 2-3% of the dogs registered over a four-year period, i.e. 80-120 descendants for this particular breed.

- Are the most-used breeding dogs closely related to each other? What will this mean with respect to the breed's gene pool?

4.1.3 Breed populations in other countries

In this section, examine the number of dogs and different breeding lines in the breed's most significant breeding countries. How large is the number of dogs in the most significant countries producing this breed? Are unrelated breeding dogs available overseas? Do separate lineages exist for this breed?

4.1.4 Summary of population structure and gene pool

In this section, summarise the extent of the population's gene pool as well as the most significant factors narrowing it (excessive breeding use of individual dogs or lineages, small number of lineages, small number of dogs of this breed worldwide, etc.)? What do the figures and information presented in sections 4.1.1 – 4.1.3 mean for the breed's gene pool?

The section should also state if the breed has a health programme (PEVISA, Programme to combat hereditary diseases and defects) based on the number of descendants, note the year this came into force as well as any alterations made to the programme and the year in which they entered into force.

4.2 Temperament, behaviour and working characteristics

Go through this section to the extent that each point is applicable to the breed in question. The actual population numbers should be given as accurately as possible under each point and the data presented in table form whenever possible.

4.2.1 Breed standard notes on temperament, behaviour and working characteristics

Present the breed standard's notes in this section.

4.2.2 Separation into show / working / other lineages

Can differences be detected in the behaviour or working characteristics of dogs representing different lineages?

4.2.3 Testing and/or description of temperament, behaviour and/or working characteristics included in the PEVISA programme

This section should present the year in which the breed's PEVISA programme entered into force with respect to temperament and behavioural traits in addition to noting any amendments to the programme and the year they took effect.

4.2.4 Temperament and behaviour in daily situations

This section presents the present-day temperament situation of the breed highlighting possible problems.

- What is the temperament assessment based on (analysis – whose?/ owner survey / temperament test / MH canine character evaluation / breeding inspection / other) and how many answers / results were available?

- How many dogs have been temperament tested or undergone an MH canine character evaluation? How large a share of annual births or registrations does this represent?
- What scores have the dogs received in the different parts of the test or character evaluation, i.e. how do the dogs of this breed behave (present in table format, in numbers)? How many dogs have received undesirable results that do not conform to the breed standard in different parts of the test or character evaluation?
- Compare the previous section to the breed's ideal profile. If the dogs do not match the breed's ideal profile, what is being done to rectify the situation? (Ideal profile of breed = desirable characteristics based on the breed standard and the breed's intended use, e.g. an ideal result from temperament test or MH canine character evaluation for a representative of the breed.)
- Analysis of temperament assessments performed in conjunction with the breed's breeding inspections: how many dogs have undergone a breeding inspection? How large a share is this of annual births? What kinds of evaluations have the dogs, which were inspected for breeding, received for their temperaments? How is the breed inspection performed / what does it include? What evaluations have the breed's dogs received for their behaviour at dog shows?
- Are there differences in behaviour between the breed's populations in different countries?
- Are there differences in behaviour between the sexes within the breed?

4.2.5 Working characteristics

- What were the dogs of this breed originally used for; how does the dog work and what characteristics are demanded for such work?
- To what extent is the original purpose useful today; is there an attempt to preserve the working characteristics and how is this being done? How are the original working characteristics suited for today's trials or other uses?
- Compare the previous point to the breed's native country and/or other important countries
- What trials have this breed's representatives participated in and what results have they achieved? Present as numbers, in table format, including statistics for the last 10–15 years and comparison to number of registrations.
- Are this breed's dogs employed as working dogs by the authorities or for some other professional purpose? Numbers?
- Which test, trial or type of work best demonstrates the dog's breed-compliant temperament and characteristics?
- Changes during the last 10–15 years (based on, e.g. trial results), taking also account of section 4.2.2, as well as the reasons behind this development.
- How can the breed's original, breed-characteristic behavioural needs be unproblematically fulfilled in present-day conditions?

4.2.6 Behaviour at home and reproduction behaviour

We recommend that the data needed for this section be collected with a questionnaire survey targeting dog owners.

- Prevalence of problems related to separation, when and in what way do these issues arise
- Reproduction behaviour: heat cycle intervals, suckling period, natural mating, puppy nurture, etc.
- Social behaviour (attitude to strange and familiar dogs or people, aggressiveness)

- Anxieties, sensitivity to sounds (what anxieties occur within the breed)
- Premature dementia, i.e. age-related behavioural problems
- Does the breed have physical, anatomical or health issues, which could affect the dog's behaviour (pain, for instance, affects behaviour in most dogs)?

4.2.7 Summary of key problem points in the breed's behaviour and temperament as well as of measures to fix them

In this section list, on the basis of what is presented in sections 4.2.1 – 4.2.6, key problem points in the breed's behaviour and temperament. In addition, consider possible causes and solutions for these problems.

4.3. Health and reproduction

4.3.1 Diseases and defects included in the PEVISA programme

This section should note the year in which the breed's PEVISA programme entered into force as well as any amendments to the programme and the year they took effect.

Also present a summary of the diseases and defects included in the PEVISA programme. Disclose the information source (owner or breeder survey, literature, Finnish Kennel Club breeding database) for each point. For each disease, present

- Brief description – you can use template texts from the Finnish Kennel Club website
- How the disease affects the dog's everyday life. In its chronic form, does the disease reduce the dog's quality of life substantially?
- How does the disease affect using the dog for its intended work
- Can the disease be treated or healed? Is treatment expensive? Will the case involve lifelong treatment? Go over these points very briefly; the aim is not to present a detailed list of treatment options and forms.
- Mode of inheritance
- Existence of possible genetic tests
- Statistics of examination results for 10-15 years derived from the breeding database
- Possible registration restrictions (if none exist, provide instructions on how to handle disease in breeding practice)
- Information on the occurrence of disease in other countries (especially in the breed's native country as well as the countries from which breeding dogs are imported).

4.3.2 Other significant diseases and defects detected in the breed

In this section, briefly present *significant and commonly occurring* diseases that are not included in the breed's PEVISA programme, but are known to occur within the breed in Finland and abroad. The Finnish Kennel Club's health questionnaire survey targeting dog owners can be used as an aid. The aim is to provide the same information on each disease as is presented on the diseases listed under section 4.3.1.

4.3.3 Causes of death

This section presents a statistic, derived from the Finnish Kennel Club breeding database, of the breed's causes and age of death or some corresponding statistic from data collected by the breed association as well as other statistics, which shed light on the matter, if any are available. Mention the date on which the statistic was looked up alongside the table. Also provide a brief analysis of the data.

4.3.4 Reproduction

This section presents information on the breed's reproduction characteristics. The breed's average litter size should be given for a period of 10-15 years (available from the breeding database's annual statistics).

Also note whether the following issues occur within the breed:

- mating problems
- impregnation problems
- birthing problems
- problems related to puppy nurture
- puppy mortality
- congenital defects or deformities

4.3.5 Anatomical features that create exposure to illnesses and problems in reproduction

Does this breed have appearance-related anatomical features that expose individuals to illnesses or wellbeing problems (cf. for example the BSI document of unhealthy features)? Are there problem points in the structure of these dogs that make natural breeding difficult?

4.3.6 Summary of the breed's key health and reproduction problems

This section lists, on the basis of sections 4.3.1 – 4.3.5, the key problem points for the breed's health, wellbeing and reproduction. Also consider possible reasons for these problems.

4.4. Appearance

4.4.1 Breed standard

This section presents the breed standard for this breed and considers if the current appearance of these dogs deviates from the breed standard to some extent.

Does the breed standard contain demands, which would expose these dogs to wellbeing problems (cf. for example the BSI list of unhealthy features)?

4.4.2 Shows and breeding inspections

Dog show participation by dogs of this breed: how large a share of each year's births has entered a show at least once? What kinds of quality evaluations have the dogs received?

Breeding inspections of dogs of this breed: how large a share of each year's births has undergone a breeding inspection? What results have been received?

4.4.3 Appearance and breed's use purpose

From the perspective of the breed's intended use purpose, what are its most essential structural and appearance characteristics (-> must be considered in conformation judging and breeding)? Does the breed's present-day structure enable these dogs to successfully fulfil the use purpose for which the breed was developed?

4.4.4 Summary of the breed's key appearance and structural problems

In this section list, on the basis of sections 4.4.1 – 4.4.3, key problem points in the breed's appearance and structure. Also consider possible reasons for these problems.

5. REALISED IMPACT OF THE PREVIOUS BREED-SPECIFIC BREEDING STRATEGY

When was the previous breeding strategy document in force? When was the first breeding strategy drafted for this breed?

5.1 Quality of the most-used breeding dogs

This section applies to breeds for which public health and/or temperament test results have been recorded in the Finnish Kennel Club breeding database or databases belonging to breed associations.

Copy the descendant statistic for males (or females) from the breeding database's breeding statistics or other corresponding data for this section. Set the previous 10 years as the year of birth, set no limit for the number of examined descendants, and include 20-30 of the males (and females), which were most used during that period. You may also choose to add to the statistic information on other characteristics of these breeding dogs, for example their trial, health examination or genetic testing results as well as estimated breeding values (EBVs). You may present two EBVs: the EBV before the start of breeding use as well as the current EBV.

Also briefly analyse the data in this section. The aim is to examine what the characteristics of the most-used dogs and their descendants have been like. Should we expect the breed to develop in a good or a bad direction through the breeding use of these dogs?

5.2 Realisation of the previous breeding strategy

This section examines the breeding objectives recorded in the breed's previous breeding strategy with respect to various characteristics, the actions undertaken and the realisation of the breeding objectives. Has the share of healthy dogs increased? Has the occurrence of timidity decreased? Is the share of examined dogs large enough to draw reliable conclusions? See examples:

Example:

Objective	Action	Result
Expand the gene pool of the breed: aim to increase sires/dams ratio 0.52 -> 0.60. The number of an individual dog's descendants remains below 70, which at present equals some 5% of registrations over four years.	Provide information about the importance of genetic diversity as well as of means to conserve it. Post a list online of all males meeting the recommendations of the PEVISA and breed-specific breeding strategy that are at least 3 years old. Annual review of all potential breeding dogs. Encourage people to bring their pet dogs into review	Sires/dams ratio 0.65. Only two dogs have more than 70 descendants, and this is justified: older males were used one final time based on the health and temperament test results of their descendants. In the review, many potential breeding dogs were searched out
The share of dogs that have undergone temperament testing or MH canine character evaluations increases 10% -> 15%. Every breeding dog is tested or inspected before their second litter.	Provided information on the importance of temperament in breeding, encouraged testing and MH evaluations as well as breeding inspections. Recommendation for all breeding	16% of the dogs registered in 2009-12 have been tested or evaluated. 90% of dogs used for breeding have been tested or evaluated. Every breeding dog tested or

Only dogs that have an overall temperament structure score of at least +2 shall be used for breeding.	dogs to be temperament tested, MH evaluated, or evaluated in a breeding inspection. Temperament test arranged annually. Ideal temperament test and MH evaluation profiles drafted for the breed.	inspected before its second litter. Only dogs with an overall temperament structure score lower than +2 have been used for breeding.
Examination percentage for hip-joint dysplasia rises 30% -> 40%. Share of dogs with C-E-class hips drops 30% -> 20%.	Information provided on the prevalence of hip-joint dysplasia and breeding, encouragement for x-ray scans. Two mass examinations organised. PEVISA, limit value for registration C. Recommendation not to couple two dogs with C-class hips.	38% of dogs registered in 2008-12 have been examined. Only one C-C combination has been made. Share of dogs with C-E-class hips 23%.
More information on the prevalence of thyroid insufficiency in the breed.	Owners and breeders encouraged to answer a health survey about their dogs that have turned 7 years old.	Information received on 42% of dogs that are at least 7 years old, some 3% of these have thyroid insufficiency.
Reduce breathing difficulties: lengthen the muzzle, i.e. get closer to the breed standard.	Muzzle and skull length of dogs participating in shows and breeding inspections measured since 2014. Recommendation to use dogs, whose muzzle/skull ratio exceeds the breed average (average checked annually), for breeding.	The muzzle/skull ratios of 120 dogs have been measured in 2014-15, the average now is 0.45. The measured dogs were born in 2009-14. Annual follow-up has not yet been conducted because there is insufficient amount of data.

If breeding objectives have not been reached, consider the reasons for this.

This section also presents how large a share of the dogs of this breed examined/tested each year were excluded from breeding during the previous breed-specific breeding strategy because of the breeding restrictions or recommendations included in the PEVISA or breeding strategy.

Are the breeding recommendations and PEVISA restrictions up to date? Are the limit values suitable or could they be tightened?

6. BREEDING OBJECTIVES AND REALISATION

6.1 Breeding objectives

This section presents objectives related to the gene pool, temperament, working characteristics, health, reproduction and appearance for the next five years. Set objectives for all issues listed under sections 4.1.4, 4.2.7, 4.3.6 and 4.4.4. In the case of some characteristics, the objective may also be to preserve the characteristic in its current state.

The objectives must be directly measurable or their realisation subject to concrete monitoring in some other way that can be verified in conjunction with a subsequent breeding strategy update (cf. the example table of section 5.2).

6.2 Recommendations for breeding dogs and combinations

In this section, list the recommendations set by the breed association regarding the characteristics of dogs and combinations (e.g. the breed association's breeding regulations), which support the realisation of the breeding objectives. Also mention what the association's recommendation is for an individual dog's maximum number of descendants.

These recommendations are used in association with, for example, exemption applications when the breeding-related values of a pairing are being defined. For this reason, the recommendations need to be sufficiently precise and unambiguous.

6.3 Breed association's measures

This section presents the measures through which the breed association will attempt to achieve the breeding objectives set in section 6.1. Such measures can include, for example, the PEVISA programme, surveying the characteristics of breed dogs through questionnaires, training breeders, buyers and show judges as well as disseminating information on the characteristics of dogs, the state of the breed, breeding objectives and breeding recommendations. Cf. the table in section 5.2 for example measures.

6.4 Risks and opportunities as well as preparing for trouble

This section very briefly goes over the biggest threats and problems in the breeding of these dogs. How will breeding be done in the future? How can risks and problems be taken into consideration?

6.5 Action plan and monitoring of the breeding programme

This section presents a schedule of the measures listed in section 6.3 for the programme's different years. The section also goes over the measures, which the breed association uses to monitor the impact of the breeding and PEVISA programmes for this breed.

7. SOURCES

8. APPENDICES

Enclose the breed standard as an appendix alongside, for example, summaries of health and temperament survey findings.