

# Effective Population Size ( Ne )

Icelandic sheepdog

Calculations are made on all dogs in the database within selected periods.

Eliminated= Parents locked for breeding

Date of calculation = 2008-10-10

Period	Eliminated	All		Calculated		Avelsbas (Ne)		Inbred %	Max. no. of puppies	Rec. no. of puppies
		Litters	puppies	Litters	Puppies	Utilized	Available			
2003 - 2007	0	104	471	37	171	50	25	1,9	23	9
1998 - 2002	0	0	0	0	0	0	0	0,0	0	0
1993 - 1997	0	0	0	0	0	0	0	0,0	0	0

## Comments

The effective population size (Ne) or the effective breeding base is not a the number of dogs used for breeding. Ne describes the rate of loss of genetic variation in a breed due to inbreeding. With a value Ne= 50 the breed will for example lose 50 genetic variation as fast as if only 24 males and 25 females were used for breeding in a system with random mating. When the breeding base (the effective population size Ne) reaches a value about 500 it does not mean that 500 animals have been used for breeding. It tells that the increase in inbreeding per generation is the same as if 500 animals, equally distributed on sexes, were mated randomly generation after generation. Such populations may survive for centuries without any substantial loss of genetic variation.

High values for Ne may sometimes be reached also in small populations. It will happen if the inbreeding of the offspring is lower than in the parentel generation. This will normally only happen if new and unrelated animals are added to the population. The available Ne will then become lower than the utilized Ne. This reason is that no new animals can be added in the two subsequently simulated generations. Hence the relationship between breeding animals will increase again causing a higher inbreeding in the offspring and thus an increasing loss of genetic variation.

The desired level for Ne is at least 100. At values of 50 or below the vitality of the breed is severely threatened due to very rapid loss of genetic variation.