

THE ICELANDIC NATIONAL CONSERVATION PROGRAM FOR ANIMAL GENETIC RESOURCES




Aðalstöðvar / Headquarters: Hvanneyri | IS 311 Borgarnes | Iceland | www.lbhi.is | sími / tel.: 433 5000



Organisation

- Committee on GR in agriculture (www.agrogen.is)
- Defined in the Agricultural Act from 1998 (2004)
 - Also in the Act on animal imports
 - Regulation on GR in agriculture 2005
- Main duties:
 - To coordinate conservation of GR in agriculture
 - To encourage research on GR in agriculture
 - To share and distribute information and knowledge on GR
 - To initiate conservation and utilisation plans for local breeds, monitor population development and give advice on breeding
 - To propose actions and funds allocated to GR at risk


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Centre for Genetic Resources

- Hosted by the Agricultural University of Iceland (AUI)
 - Government funding through the GR committee and the AUI
 - Cooperation with all stakeholders in Iceland
 - Breeding organisations & societies working with small populations
- Main tasks:
 - To coordinate the GR work on behalf of the GR committee
 - To provide information on GR through publication, internet pages, seminars etc
 - To coordinate communication with nordic and international organisation on GR
 - To encourage and assist student in projects concerning GR

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GR Center AUI

- One person – 50% employed
- Plants, animals, freshwater fish and forest
- One seminar a year
- Work on strategic plans and breeds at risk
 - Goats have been the main focus in recent years

Conservation plan made in 2012

- AI (Artificial insemination)
- new recording scheme
- Increased funding for goat conservation and plans to include goat farming in the regular agreements on the agricultural subsidy system
- Increase marked for goat products – reserch on products
- Genetic reserch

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Strategy and action plan for animal, plant, forest and aquatic genetic resources in agriculture

- Updated every five years

**Varðveisla
erfðaaufkinda
Landsáætlun
2009-2013**



**Varðveisla erfðaaufkinda
Landsáætlun 2014-2018**

In preperation

2019-2023

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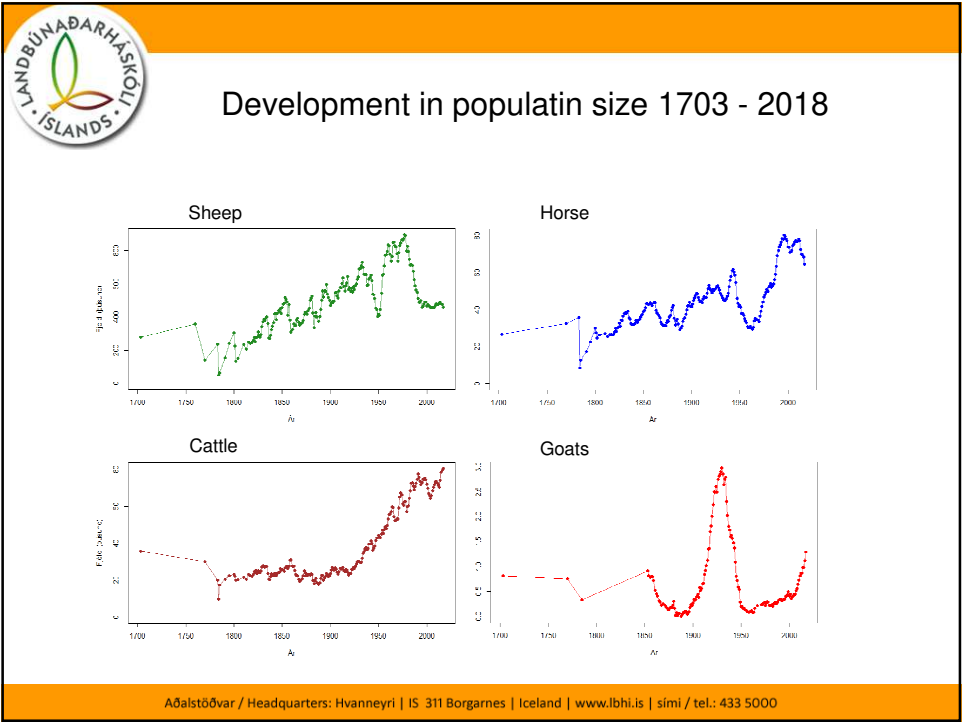


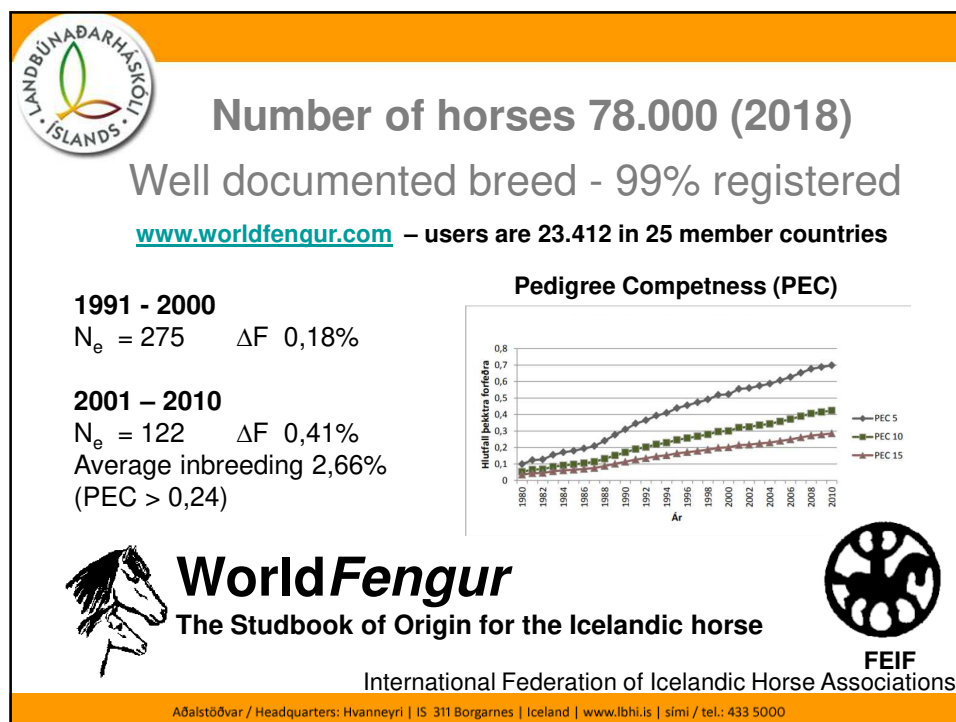
Livestock

- Establish strategic plans that define the conservation value of the local breeds to enable reaction to possible imports
 - Actual conservation plans need to be developed in case of imports and changes of production breeds
- Monitor effective population size and breed status in cooperation with breeding organisations.
- Encourage the use of optimal contribution theory in breeding plans to reduce rate of inbreeding




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Number of Cattle 71.000

Milking Cows 25.000

| Years | ΔF | N_e |
|-----------|------------|-------|
| 1985-1990 | 0,34 | 147 |
| 1995-2000 | 0,38 | 131 |
| 2000-2005 | 0,43 | 115 |
| 2005-2010 | 0,79 | 63 |

- Better pedigree records
- BLUP selection
- Breeding plan to reduce the rate of inbreeding by using optimal contribution theory (EVA)


Phenotype
Color variation high, mostly polled

Research projects
Colour variation within the Icelandic Cattle breed, Sara María Davíðsdóttir 2012

Genetic variation within the Icelandic cattle breed: assessment using microsatellites and analysis of single nucleotide polymorphisms in the Leptin and DGAT1 genes, Margrét Guðrún Ásbjarnardóttir, 2010

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Sheep population 465.000

- Partly divided into horned and polled flocks
- Rate of inbreeding* (ΔF per generation):
- Horned flocks **0,53 %**
 - Hestur (AUI breeding flock)* 0,13 %
- Polled flocks **0,42 %**
 - Heydalsá (breeding flock)* 0,22 %
- $N_e : \approx 100$ (94-119)

* Selected flocks with extensive pedigree records

Information Center for Sheep

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Breeds/populations at risk

- Goats
- Leader sheep
- Chickens
- Dogs



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Goats

- Support since 1965
- Conservation plan made in 2012

Main goals

- Support to all winterfed registered goats
- Internet based heardbook
- AI and semen collection on regular basis
- Product development and marketing
- Genetic research



Geitfjárræktarfélag
Íslands

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Population increasing

- 1491 in 117 herds 2018
- Frozen semen available since 2010 and new AI station operating this year
- New recording scheme (internet based) www.heidrun.is
- Research and production development in cooperation with MATIS (Innovation in food production)
- Goat centre – tourism and home made products www.geitur.is on farms
- Goat farmers association
150 members www.geit.is



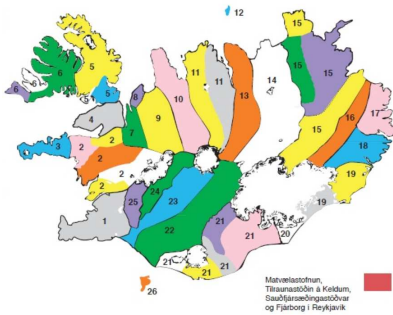
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Isolation zones

Limited transport of sheep and goats between zones

In 1933 import of sheep – serious diseases
Paratuberculosis, Scrapie



Matvælistofnun
Tilraunastofn & Keldum
Sæðijarsæðingastöðvar
og Fjæðing | Reykjavík

Inbreeding is high

- Effective population size <10 animals
(Baldursdóttir et. al., 2012)

Some goat herds have been isolated for 80 years

- AI will help break up the isolation

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„Icelandic goats“ on a conservation farm in Waldoboro, Maine, USA



Bred from Oberhasli goats with semen from Iceland






100 semen straws exported in 2011
200 straws will be exported this year

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Leader sheep

- Population around 1,500 in 415 flocks excluding crossbreds
 - Defined as a separate sheep breed from 2015/16
 - 99 % coloured, most piebald; 97% horned
 - Pedigree records are incomplete – average inbreeding < 5%
 - Separate recording system has been organised that should improve pedigree data
 - AI used extensively – 2yrs turnover of AI rams seems to be sufficient

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Conservation plan

- Effort in collecting pedigree data
- Breeding goals



Center for Leader sheep

- Tourism and information of the breed
- Wool products
- „If you wear a sweater made of wool from Leader sheep – you will always find the way home“



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Icelandic Sheepdog



- Keep track of population size and breeding status in cooperation with the Icelandic Kennel Club
 - Very narrow genetic base
 - Estimated number of founders 23 (Oliehoek, 1999)
- Current number in Iceland: - 750-800
 - Large part of the population in other countries
 - Estimated around 7000
 - Local population increasing



Deild íslenska fjárhundsins

www.dif.is

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Landrace chickens

- Descended from a collection of chickens in 1974-75.
- Origin not defined
- Great variation in plumage colour and combs
- Association of bird holders
 - Definition of breed characteristics
 - „allowed“ traits
- No individual records
- Estimated 3500 birds





www.haena.is



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Madrid, May 22nd 2019

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General aims

- Increased funds for the GR committee and the GR centre are necessary to fill the defined roles and enable important tasks
- Information on Icelandic GR both in Iceland and in other countries
 - Publications – Events - Cooperation
- Ensure participation in Nordic and other international cooperation on GR in agriculture
 - NordGen - FAO
 - ERFP – ITPGRFA
 - EFABIS-Net – DAD-IS

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Thank you

