EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

EURC-EAB update

ERFP General Assembly, Innsbruck, August 2025

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ELEVAGE idele

Federal Office
for Agriculture and Food

1

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Designation of EURC-EAB

COMMISSION IMPLEMENTING REGULATION (EU) 2022/2077

of 27 October 2022

designating the European Union reference centre responsible for the scientific and technical contribution to the establishment and harmonisation of the methods for the preservation of endangered breeds, and the preservation of the genetic diversity existing within those breeds

(Text with EEA relevance)

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ELEVAGE idele

Federal Office
for Agriculture and Food

2

Scope of the EURC-EAB

- Responsible for the scientific and technical contribution to the establishment and harmonisation of methods for the preservation of endangered breeds, and the preservation of the genetic diversity existing within those breeds

- Bovine, Porcine, Ovine, Caprine, Equine species

- EURC-EAB works on endangered breeds of those animal species only

3

Consortium – core group

Coralie Danchin (IDELE)

Sipke Joost Hiemstra (WUR-CGN)

Holger Göderz (BLE)

Mirjam Spoelstra (WUR-CGN)

Lisa Balzar (BLE)

4

2025-2027 - 2nd Work Programme

- Work Programme – According to Article 29 (4)(b)(ii) of Regulation (EU) 2016/1012

Three "Workpackages" (2025-2027)

1. Cooperation with breed societies, third parties designated by breed societies and competent authorities
2. Methods for the preservation of endangered breeds, and the preservation of the genetic diversity existing within those breeds
3. Emerging problems, international cooperation and technical expertise

---

Work Programme 2025-2027

Workpackage 1
1.1 - EURC-EAB contact point and communication
1.2 - Training and dissemination

Workpackage 2
2.1 - Guidelines and tools for evaluation of breeding programmes of endangered breeds
2.2 - Harmonisation of breed risk (endangerment) status indicators
2.3 - Integration of ex situ strategies with endangered breeds breeding programmes
2.4 - Breeding programmes of transboundary (endangered) breeds

Workpackage 3
3.1 - Cooperation with European and internationally recognized organisations
3.2 - Provide input and technical expertise for the SCZ and for exchange between MS
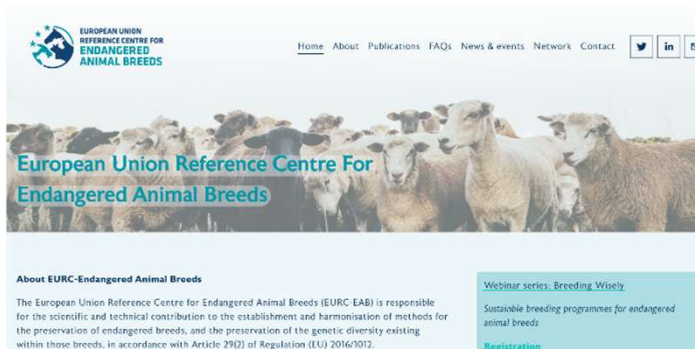
1.1 Website and contact point

info@eurc-eab.eu
www.eurc-eab.eu

Website
- Frequently asked questions (FAQ)
- Guidelines, tools, publications

Communication with network
- NCA
- breed societies
- third parties
- Social media: LinkedIn
- Collecting (emerging) questions/problems
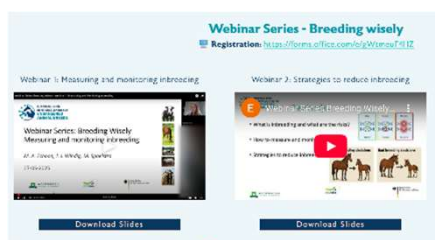
Lead institute WUR – Mirjam Spoelstra

1.2 Training and dissemination

- Dissemination of guidelines, methods, tools and best practices
  - to support NCA's and breed societies
  - Implement Regulation [EU] 2016/1012
  - further development of breeding programmes of endangered breeds

- Webinar series
=> New series to come

2.1 Breeding Programme Assessment

**Guidelines and tools for (self)evaluation of breeding programmes for endangered breeds**

Effective BPs are a prerequisite for the conservation of endangered breeds and the genetic diversity within those breeds.

Objectives:

- Harmonize methodology and frameworks
- make assessments "comparable" across breeds, species and countries

Target groups: breed societies & NCAs

Lead institute WUR – Jan ten Napel, Mirjam Spoelstra, Mira Schoon
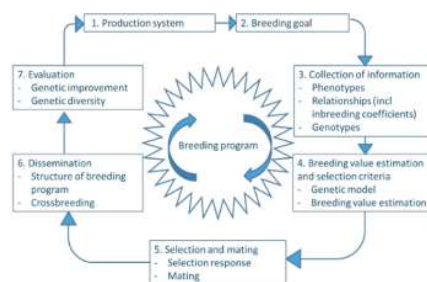
9

Expert group on breeding programme assessment

Objective

- Validate and discuss on data & metrics to be included
- Representation of different countries & systems → validation of appriorateness & feasiblity to provide data
- Harmonization of phrasing and terms → targeted towards breed societies & in line with EU regulation 2016/1012

Set-up

- Expert group established in October 2024
- Several online meetings → consensus on areas of assessment and included metrics

10

Areas of assessment

1. **Breeding programme objectives**
   - Derived from the overall aim of the BP as specified in the request for approval
2. **Breeding programme design**
   - Set of protocols for systematic actions to achieve the BP objectives
3. **Breeding programme implementation**
   - Extent to which the design is used as intended. Includes breeder participation, use of protocols and meeting targets.
4. **Monitoring of breeding programme**
   - Is the BP effective and efficient in reaching its objectives?
5. **Breeder involvement**
   - A BP will only be effective if breeders are intrinsically motivated to participate and implement the protocols.
6. **Self-sustainability of breeding programme**
   - BP is able to remain stable despite challenges, such as the loss of a herd, or cuts in external financial support

11

Data collection

1. **Descriptive information on breeding programme**
   - Origin breed, main geographical locations, breeding book structure
   - Details of breeding programme, purpose, overall aim
2. **Current state and trends of breeding stock in breeding programme**
   - Size of the breeding population, design and implementation of breeding book, number of active breeders and distribution of number of breeding animals per breeder
3. **Breed preservation effort and trends**
   - Derogations, rate of inbreeding, outcross, in-situ & ex-situ conservation and recent trends
4. **Breed improvement effort and trends**
   - Features of appearance, performance and adaptation to specific environments
5. **Self-sustainability of the breeding programme**
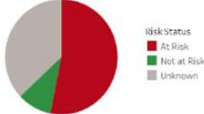   - A description of any factors that contribute to self-supporting the breeding programme

12

Excel datasheet → graphical summary

13

Next steps

From data to assessment

- Define a default score and default accuracy
- Assign a score (1-5) to all possible answers for each question
- Assign accuracy to 'guessed', 'estimated', 'observed/measured'
- Divide 100 points over questions contributing to an assessment area as weighting factors for score and accuracy
- Calculate weighted sum for each assessment area for score and accuracy

Collaboration with ERFP AHA / Expert Group

- Testing, improving, dissemination

14

2.2 - Harmonisation of breed risk (endangerment) status indicators

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Lead institute IDELE - Stéphanie Minéry, Coralie Danchin

SDG 2.5.2 Percentage of local breeds at risk
of extinction out of which of known status

Risk Status
■ At Risk
■ Not at Risk
■ Unknown

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ELEVAGE idele

Federal Office
for Agriculture and Food

15

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Analysis of the 2023 Survey
completed by email sollicitations (2024/2025)

• Number of answers : **35 countries**

Use the classification system given by FAO (2013)	Yes	14 countries	Croatia, Czech Republic, Denmark, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Montenegro, The Netherlands, Rep. Of Cyprus, Slovenia, Sweden	≈50%
	Yes, but adjusted	2 countries	Norway, Portugal	
	No	14 countries	Austria, Belgium, Bulgaria, Estonia, France, Germany, Luxembourg, Poland, Serbia, Slovakia, Spain, Switzerland, UK, Iceland	≈50%
	No specified	5 countries	Finland, Georgia, Hungary, Romania, Armenia	

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ELEVAGE idele

Federal Office
for Agriculture and Food

16

Analysis of the 2023 Survey
completed by email sollicitations (2024/2025)

- For countries **who don't use the FAO system** (14 countries) :

Country	Pop size	Pop trend	Ne	Nm	Nf	Others criteria
Austria	X	X	X			
Belgium		X	X	X	X	
Bulgaria		X	X		X	X
Estonia				X	X	
France		X	X		X	X
Germany			X			
Luxembourg						X
Poland		X	X		X	X
Serbia		X	X			x
Slovakia			X			
Spain		X		X	X	X
Switzerland	X	X	X	X	X	X
UK					X	
Iceland	X	X	X			

X : main criteria for the country

- 10 countries are using **Ne** (generaly computed from Nf and Nm)
- 8 countries are using **number of female breeding animals**
- 9 countries are using **population trend**
- 4 countries are using **number of male breeding animals**
- 3 countries are using **population size**

➔ Most countries use **several criteria**

17

Comparison of thresholds
Number of breeding Female (Nf)

Endangered	Cattle	Sheep	Goats	Horse	Pigs	Poultry
Austria*	7500	10000	10000	5000	15000	25000
France, basic	7500	6000	6000	8000	1000	500
France, adjusted	11250	9000	9000	12000	1500	750
Bulgaria, basic	7500	6000	6000	10500	3000	750
Bulgaria, adjusted	12500	11000	10000	13000	6000	1500
Poland	7500	6000	6000	10000	1000	500
UK*	7500	10000	10000	5000	15000	25000
Spain*	7500	10000	10000	5000	15000	25000
Estonia	1000	1000	1000	1000	1000	10000
FAO (2013) endangered	3000	3000	3000	3000	1000	1000
MEAN	**7275**	**7100**	**7400**	**7550**	**5950**	**9000**

* EU thresholds 2006

18

Analysis of the 2023 Survey
completed by email sollicitations (2024/2025)

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

- For countries **who don't use the FAO system** (14 countries) :

Country	Pop size	Pop trend	Ne	Nm	Nf	Others criteria
Austria	X	X	X			
Belgium		X	X	X	X	
Bulgaria		X	X		X	X
Estonia				X	X	
France		X	X		X	X
Germany			X			
Luxembourg						X
Poland		X	X		X	X
Serbia		X	X			x
Slovakia			X			
Spain		X		X	X	X
Switzerland	X	X	X	X	X	X
UK					X	
Iceland	X	X	X			

- 10 countries are using **Ne** (generaly computed from Nf and Nm)
- 8 countries are using **number of female breeding animals**
- 9 countries are using **population trend**
- 4 countries are using **number of male breeding animals**
- 3 countries are using **population size**

➔ Most countries use **several criteria**

19

Analysis of the 2023 Survey
completed by email sollicitations (2024/2025)

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

- The main « other criteria »

Country	Geographic concentration	degree of inbreeding	cryo conservation plan	Sanitary risk	Economic factors	Social factors
Bulgaria	X	Via Ne	X		X	X
France	X	Via Ne	X	X	X	X
Poland	X	Via Ne	X		X	X
Serbia	X	X		X	X	X
Spain	X	X	X		X	X
Switzerland	X	X	X		X	X

20

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Example of use of adjusted thresholds

• **France example** : for "local breed" defined as per French regulations (Code Rural, Article D-653-9) as "a breed mainly linked to a specific territory by its origins, its location, or its use", where "territory" means a small subsection of the country.

Verrier *et al.*, 2015

Last update : January 2023

Number of breeding females*	Cattle	Sheep	Goats	Horse	Pigs	Poultry
Basic thresholds	7,500	6,000	6,000	8,000	1,000	500
Adjusted thresholds	11,250	9,000	9,000	12,000	1,500	750

If **aggravating circumstances** (+50%)

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ÉLEVAGE idele

Federal Office for Agriculture and Food

*with at least one offspring

21

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

What are « aggravating circumstances » ?

• France example

How to determine « **aggravating circumstances** » ?

6 modulating indicators => 6 Partials scores
1. Recent evolution of the number of breeding females => $SCORE_1$
2. Percentage of cross-breeding => $SCORE_2$
3. Effective population size => $SCORE_3$
4. Potential risk of epidemics => $SCORE_4$
5. Breeder organization and technical support => $SCORE_5$
6. Socio-economic context => $SCORE_6$

GLOBAL SCORE

0 — **No at risk** ———— 5 — **Maximum risk**

Aggravating circumstances if

GLOBAL SCORE **> 2.5**

or 2 PARTIAL SCORES **> = 4**

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE L'ÉLEVAGE idele

22

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

The breed's RADAR

Recent evolution of the number of breeding females

Percentage of cross-breeding

Socio-economic context

Effective population size

Breeder organization and technical support

Example for a breed

INRA℮ CT℞G

➔ Help to identify the major risks for the breeds

0 ◁────────────▷ 5

No at risk   **Maximum risk**

23

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

ERFP Task Force – Risk Status and Indicators – Final Report 2015

Indicators classified as

ERFP

- <u>Primary indicators</u> :
  - Numerical indicator : **Number of breeding females**
  - Genetic erosion : **Inbreeding rate / generation** *(or Ne)*
  - Geographic concentration of the population

- <u>Secondary indicators</u> on social, economical, environmental and political aspects

WAGENINGEN UNIVERSITY & RESEARCH

INSTITUT DE L'ÉLEVAGE idele

Federal Office for Agriculture and Food

24

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

Possible recommandations as EURC-EAB

- Primary indicators (demographic)
1. Number of breeding females (or population size)
2. Ne

Thresholds to be decided

When possible :
3. geographical distribution of the population
4. breeders organisation
5. socio-economic factors

Thresholds to be adjusted

=> Each country is in charge of the **adjusted thresholds + final SCORE**

WAGENINGEN UNIVERSITY & RESEARCH   INSTITUT DE L'ELEVAGE idele   Federal Office for Agriculture and Food

25

EUROPEAN UNION REFERENCE CENTRE FOR ENDANGERED ANIMAL BREEDS

Next Steps

- EURC-EAB Guidelines/options for enhanced harmonisation of assessment of (endangered) breed risk stastus

- Collaboration with ERFP WG/AHA/experts => meeting August 19th

WAGENINGEN UNIVERSITY & RESEARCH   INSTITUT DE L'ELEVAGE idele   Federal Office for Agriculture and Food

26

2.3 - Integration of ex situ strategies with endangered breeds breeding programmes

Complementarity of genebank strategies with breeding programmes for endangered breeds

- Provide best practices and guidelines to NCA and genebanks
- EU Animal Breeding and EU Animal Health legislation related
- ERFP and EUGENA network collaboration

Lead institute BLE – Holger Goederz & Lisa Balzer

- Joint activities: ERFP AHA ex situ / In situ and ERFP WG Ex Situ

27

NEW!

GUIDELINES FOR THE DEVELOPMENT OF NATIONAL ANIMAL HEALTH REGULATIONS FOR MATERIAL INTENDED TO BE KEPT IN GENE BANKS.

July 2025

28

2.4 - Breeding programmes of transboundary (endangered) breeds

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Breeding programmes for endangered breeds in EU countries can benefit from:

- Extension of national breeding programmes to other EU Member States.
- Collaboration with breed societies in other EU Member States.
- The use of breeding animals of breeds or subpopulations from other territories

→ Guidance for breed societies and National Competent Authorities how to further develop breeding programmes of endangered breeds in a transboundary context

→ Dissemination of methods and tools available

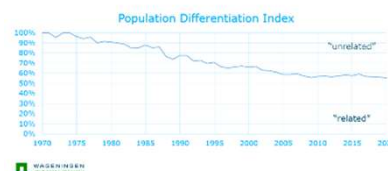Lead institute WUR – Renzo Bonifazi, Jan ten Napel, Jack Windig, Mira Schoon

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE
L'ELEVAGE idele

Federal Office
for Agriculture and Food

29

EUROPEAN UNION
REFERENCE CENTRE FOR
ENDANGERED
ANIMAL BREEDS

Example of ongoing work:
A generic measure of genetic relatedness of populations

"Population Differentiation Index"

To support decision making by NCA or breed society:

- Transboundary breed or two single breeds?
- Recognition of any distinct subpopulations within a breed
- Genetic comparison of uniqueness of breeds
- Sustainable level of exchange of breeding stock between breeds

Genetic relatedness of Belgian and Dutch Draught horse over time

Population Differentiation Index

"unrelated"

"related"

1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020

WAGENINGEN
UNIVERSITY & RESEARCH

WAGENINGEN
UNIVERSITY & RESEARCH

INSTITUT DE
L'ELEVAGE idele

Federal Office
for Agriculture and Food

30

3. Cooperation with European and internationally recognised organisations

31

Questions, suggestions or feedback?

- How can ERFP and EURC-EAB further enhance collaboration?

  - ERFP SC / EURC EAB meeting once a year in December

- Emerging topics to be addressed ?

  - [EU 2016/1012 breeding legislation related]

- Further ideas for webinars?

32