



AREC

Raumberg-Gumpenstein

Agriculture

Conserving rare breeds in Austria

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An Agency of the
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Agriculture, Regions and Tourism

Content

What is an „Austrian breed“?

History of conservation breeding in Austria

Austrian Agro-ecological Program (ÖPUL)

Development of populations

The Austian Gene Bank for Farm Animals

Our rare breeds in the program

Conclusions

What is an „Austrian breed“?

A breed can only be acknowledged as an Austrian breed if it fulfils the requirements of EU legislation and

- if it already had a herdbook in Austria before 1938 (continued or discontinued) or
- if there is ample evidence that the breed has always been present and bred in a part of Austria as it is today (native landrace breeds) or
- if it stems from the Austro-Hungarian Monarchy and there is ample evidence that the breed has had relations to regions of Austria as it is today (e.g. Racka sheep, Mangalica and Turopolje pigs, Hucul horse).

Conservation breeding in Austria

1982 study on status of traditional cattle breeds

results

Breed	Number of heads
Original Pinzgau	~ 4000
Tyrolean Grey	~ 4000
Original Austrian Brown	~ 1000
Murboden	~ 500
Carinthian Blond	~ 100
Waldviertler Blondvieh	~ 40
Tux-Zillertal	~ 40
Ennstaler Bergschecken	~ 20
Pustertaler Sprinzen (Italy – Southern Tyrol)	~ 300

First conservation program 1983 - 1994

Cattle breeds only

Analysis of heterozygosity by blood groups

Building nucleus herds in official institutions (e.g. vetmed University, Vienna)

Planned mating by artificial insemination (AI)

Embryotransfer, freezing of embryos

Subsidies for farmers joining the program

Agri-Environmental Program 1995 - 2000

Austria joined EU in 1995

Co-financed Agri-Environmental Program (ÖPUL)

Measure for rare breeds

List of breeds (20 breeds)

Holders get subsidies

List of breeds not comprehensive, no conservation plan, no monitoring of populations, no herdbook breeding

Agri-Environmental Program 2001 - 2006

Updated list of breeds (30 breeds)

Herdbook compulsory

One breeding organisation per endangered breed

Conservation plan for highly endangered breeds

Planned mating based on pedigree analysis to reduce inbreeding

Male breeding animals get special attention and more funds

Monitoring of population development

Start of genetic characterisation of rare breeds

Agri-Environmental Program 2007 - 2014

Updated list of breeds (31 breeds)

Closing of herdbooks

Recording of production and fitness traits

Start of marketing schemes

Quality beef and lamb meat (e.g. Murboden, Tyrolean Grey, Krainer Steinschaf)

Wool marketing of Waldschaf

Population monitoring tools built into central databases for cattle, sheep, goats and pigs

Agri-Environmental Program 2015 - 2022

30 breeds, 3 different levels of subsidies

Endangered – herdbook, recording, yearly reporting of population development

Endangered with special breeding program – planned mating (pedigree analysis), estimation of breeding value, index selection based on increase of inbreeding and production traits

Highly endangered – planned mating only, selection based on increase of inbreeding, recording for characterisation only

Current subsidies for breeders

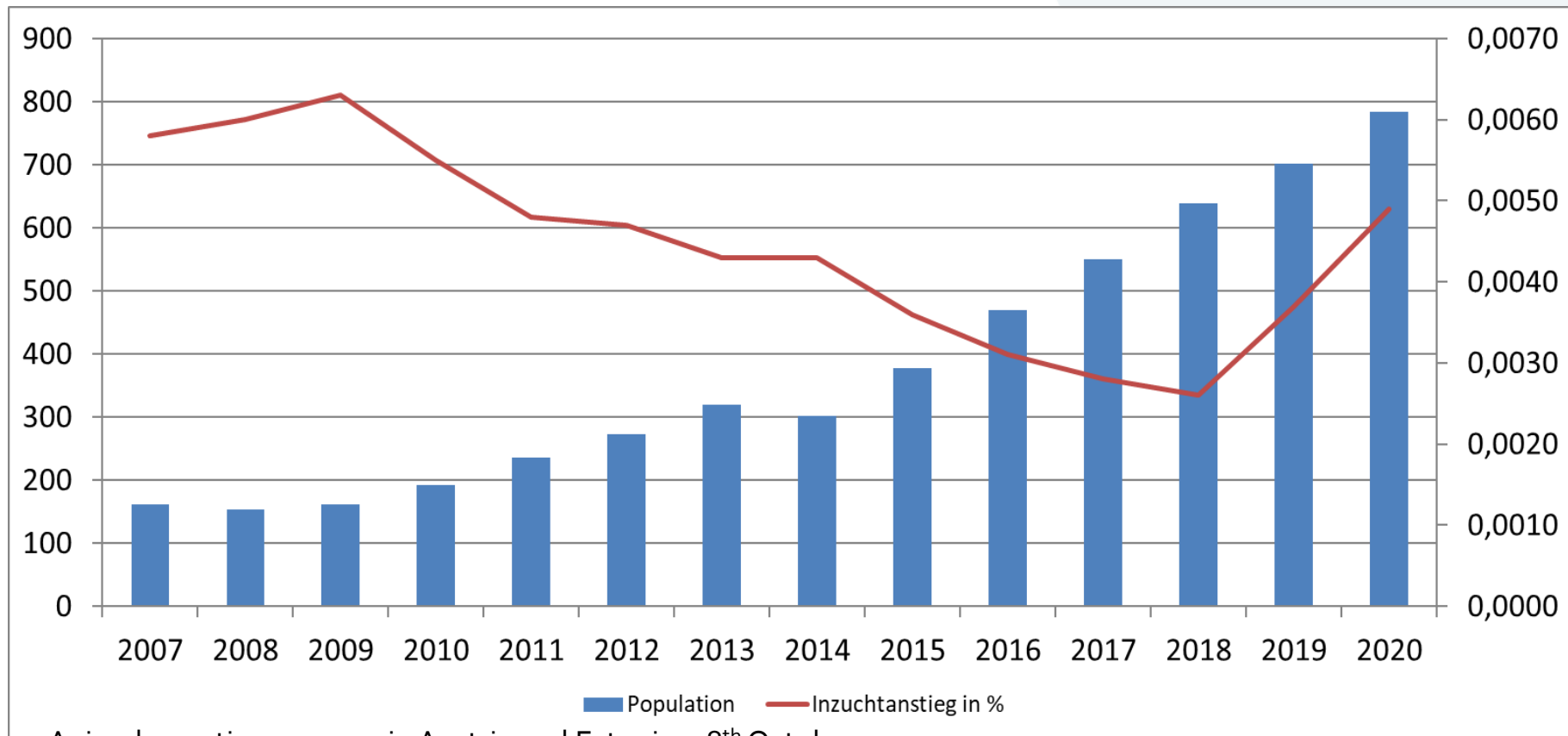
endangered	€
mare, cow	180
sheep, goat	40
stallion, bull	360
ram, buck	80

endangered with special breeding program	€
cow	210
sheep, goat	50
bull	420
ram, buck	100

highly endangered	€
cow	280
sheep, goat	60
sow	150
bull	360
ram, buck	120
boar	300

Development of population (example)

Ennstaler Bergschecken



Animal genetic resources in Austria and Estonia, 28th October 2021

Planned for new program 2023 – 2028 (?)

2 levels of funding – basic and premium

No upper limit of breeding animals, yearly joining of measure possible

Pedigree based population monitoring for all breeds in program

Basic

- Ancestry control for male breeding animals for all breeds

Premium

- Ancestry control for all breeding animals
- Use genomics for planned mating and ancestry control as appropriate

Gene Bank for Farm Animals

Founded 1997

Member of EUGENA

First task – Support conservation breeding with semen

Second task (1999) – build backup for cattle AI, all breeds

Third task (2002) – start Farm Animal DNA Bank (genomic DNA), all breeds

Fourth task (2010) – build backup for pig AI, all breeds

Fifth task (2014) – support rare pig breeds with extra semen (danger of African Swine Fever)

Last task so far (2018) – support dairy goat breeding

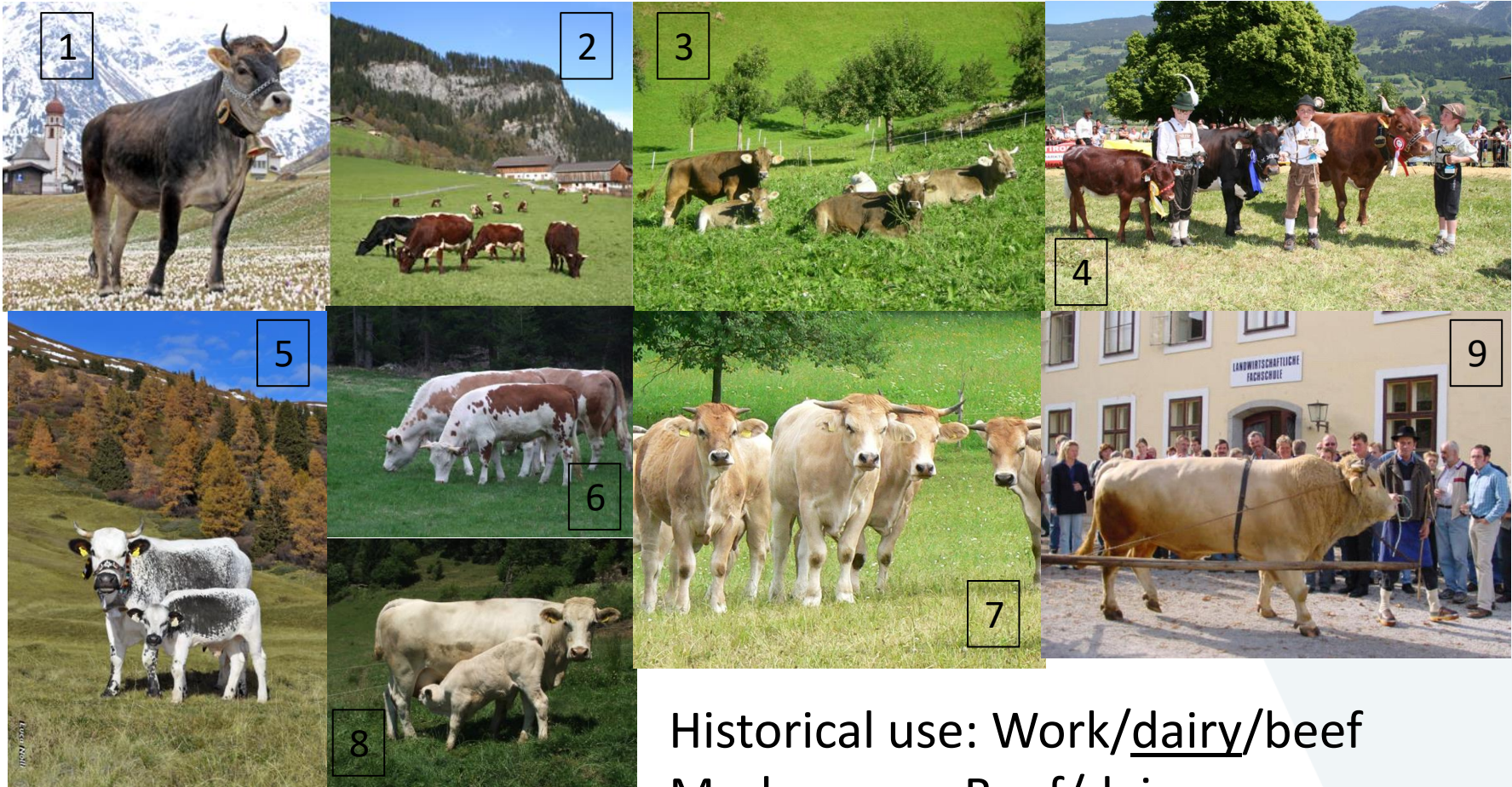
Genebank 2020

Cattle Archive owned by AI centres (private)

Public Genebank content 2020				
	Breeds	donors	doses	
Cattle	8	261	150633	endangered breeds
Goat	9	158	45675	all breeds
Pig	7	67	1271	all breeds
Sheep	8	182	60755	all breeds
Total	32	668	258334	

9 cattle breeds

- | | |
|-------------------------|---|
| Tyrolean Grey | 1 |
| Original Pinzgau | 2 |
| Original Austrian Brown | 3 |
| Tux-Zillertal | 4 |
| Pustertaler Sprinzen | 5 |
| Ennstaler Bergschecken | 6 |
| Murboden | 7 |
| Carinthian Blond | 8 |
| Waldviertler Blondvieh | 9 |



Historical use: Work/dairy/beef
Modern use: Beef/dairy

7 goat breeds

Chamois coloured

Peacock

Pinzgau

Tauernschecken

Pinzgauer Strahlenziege

Steirische Scheckenziege

Blobe Ziege

Historic use: Dairy

Modern use: Dairy/

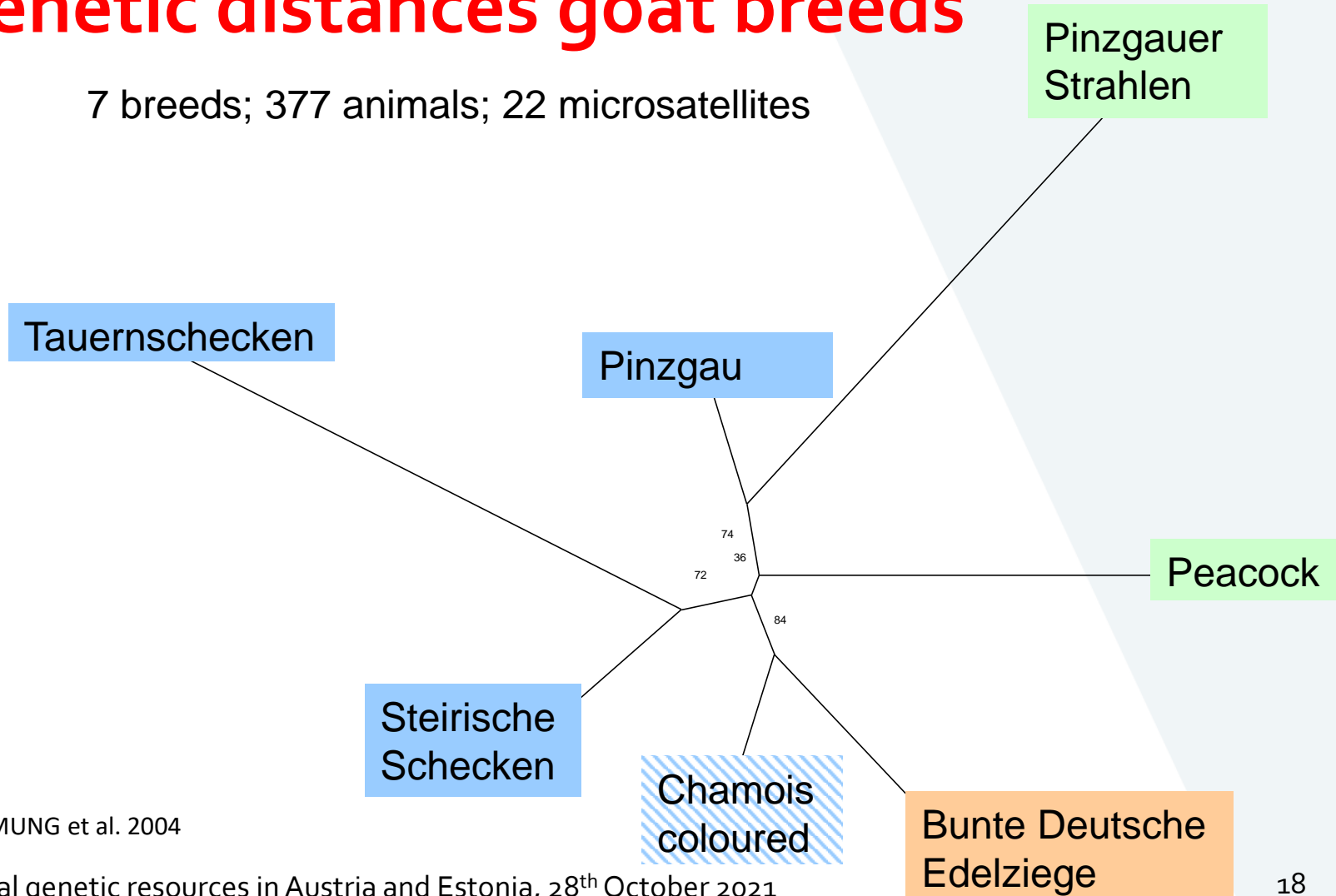
landscaping/kid meat

Animal genetic resources in Austria and Estonia, 28th October 2021



Genetic distances goat breeds

7 breeds; 377 animals; 22 microsatellites



BAUMUNG et al. 2004

Animal genetic resources in Austria and Estonia, 28th October 2021

8 Sheep breeds

Tyrolean Stone

Brown Mountain

Carinthian

Krainer Steinschaf

Alpines Steinschaf

Waldschaf

Montafoner Steinschaf

Racka

Historical use: Wool/meat/milk

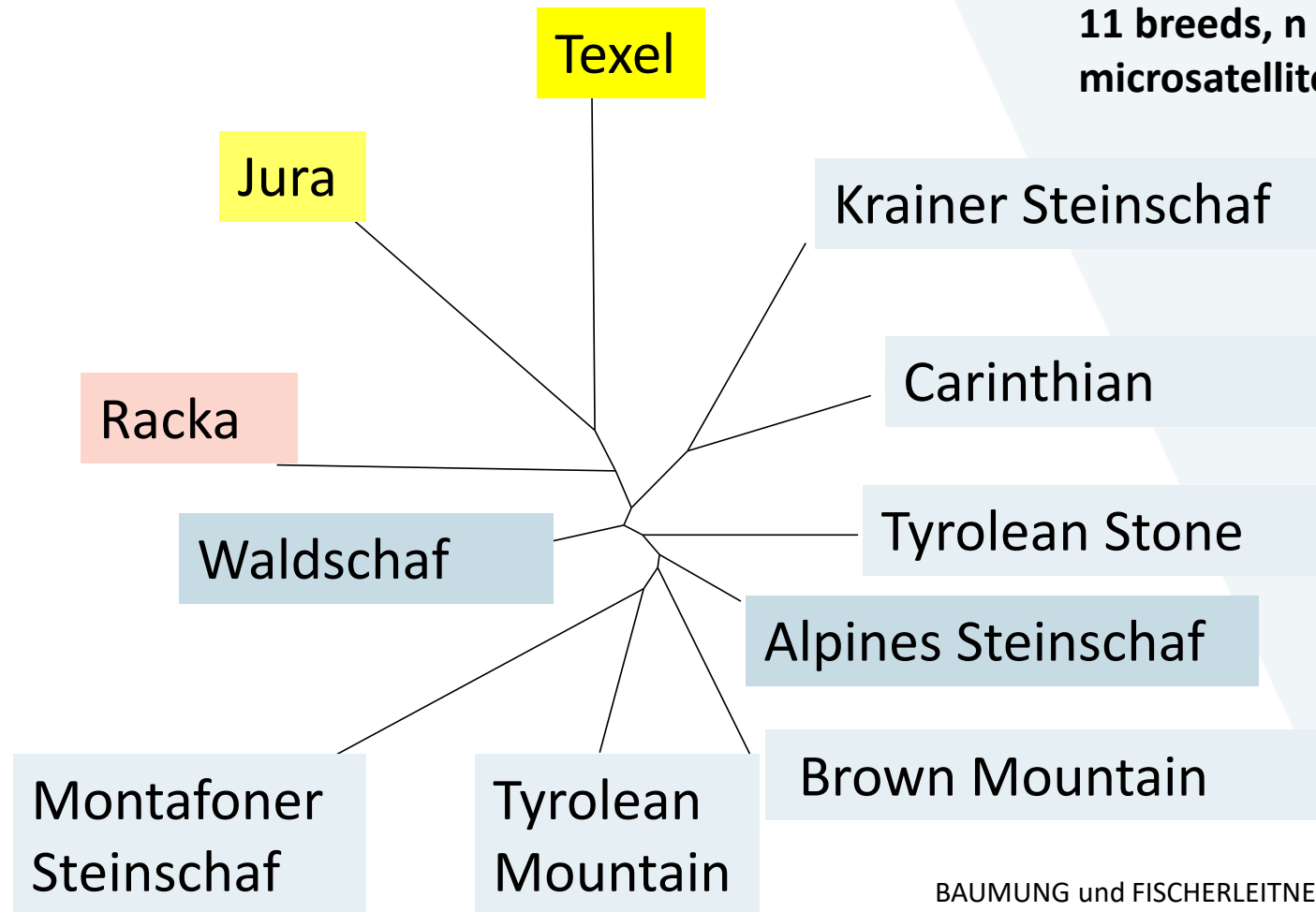
Modern use: Meat/landscaping/(milk)/(wool)

Animal genetic resources in Austria and Estonia, 28th October 2021



Genetic distances sheep breeds

11 breeds, n = 717, 21
microsatellites



BAUMUNG und FISCHERLEITNER, 2002

5 horse breeds

Lipitsa

Noric

Huzul

Shagya

Old Austrian Halfblood Strains

- Antonius
- Furioso-Northstar
- Gidran
- Przedswit

Historic use: work/military

Modern use: recreation/traditions

Animal genetic resources in Austria and Estonia, 28th October 2021



2 Pig breeds

Mangalitsa

Turopolje

Historic use: Lard/pork

Modern use: Traditional
specialities/premium pork



Conclusions

Conservation of rare breeds is a long-term task

- Involvement of all stakeholders
- Breeding organisations are the most important partners in conservation programs
- Raising public and political awareness
- Scientific support for breeding programs and funding schemes
- Building of marketing and quality product schemes
- Idealistic and enthusiastic breeders

Conclusions

Conservation of rare breeds needs an holistic approach

- Breeding program (genetic analysis, planned mating)
- Genebank
- Quality schemes for special products
- Awareness raising for new uses (landscaping, tourism)
- Funds
 - Subsidies for farmers, breeding organisations
 - Funds for genebank, genomic analysis, software

Thank you for your attention!

