

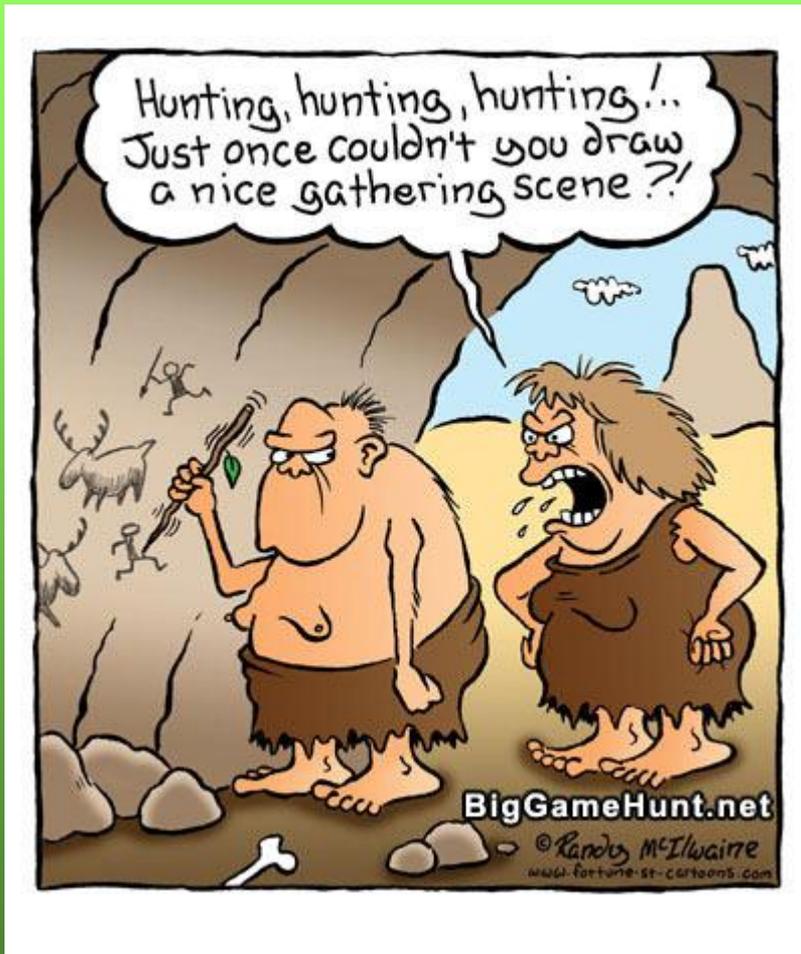
# GAME MANAGEMENT UNDER RANCHING AND FARMING CONDITION IN THE CZECH REPUBLIC AND EUROPE



Radim (Maugli) Kotrba, secretary general of FEDFA

Czech University of Life Sciences in Prague and Institute of Animal Science in Prague

# Coevolution of humans and deer ....



...at least in good direction for humans.

## History of deer farming

- In Europe is found evidence of „farmed“ deer from Stone Age- antlers used as tools (Fletcher, 2003).

Early deer husbandry- from Upper Paleolithic time described as winter fodering (Barker, 1985)



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- During Middle Age evidence of farmed deer in England and Scotland (Birrell, 1991).



# Middle Age on British Islands

(1066 – 1485)

1,000 – 3,000 of deer  
fenced parks,

Only 1-5 mill. humans

Why? (Fletcher, 2006)



## History of deer farming

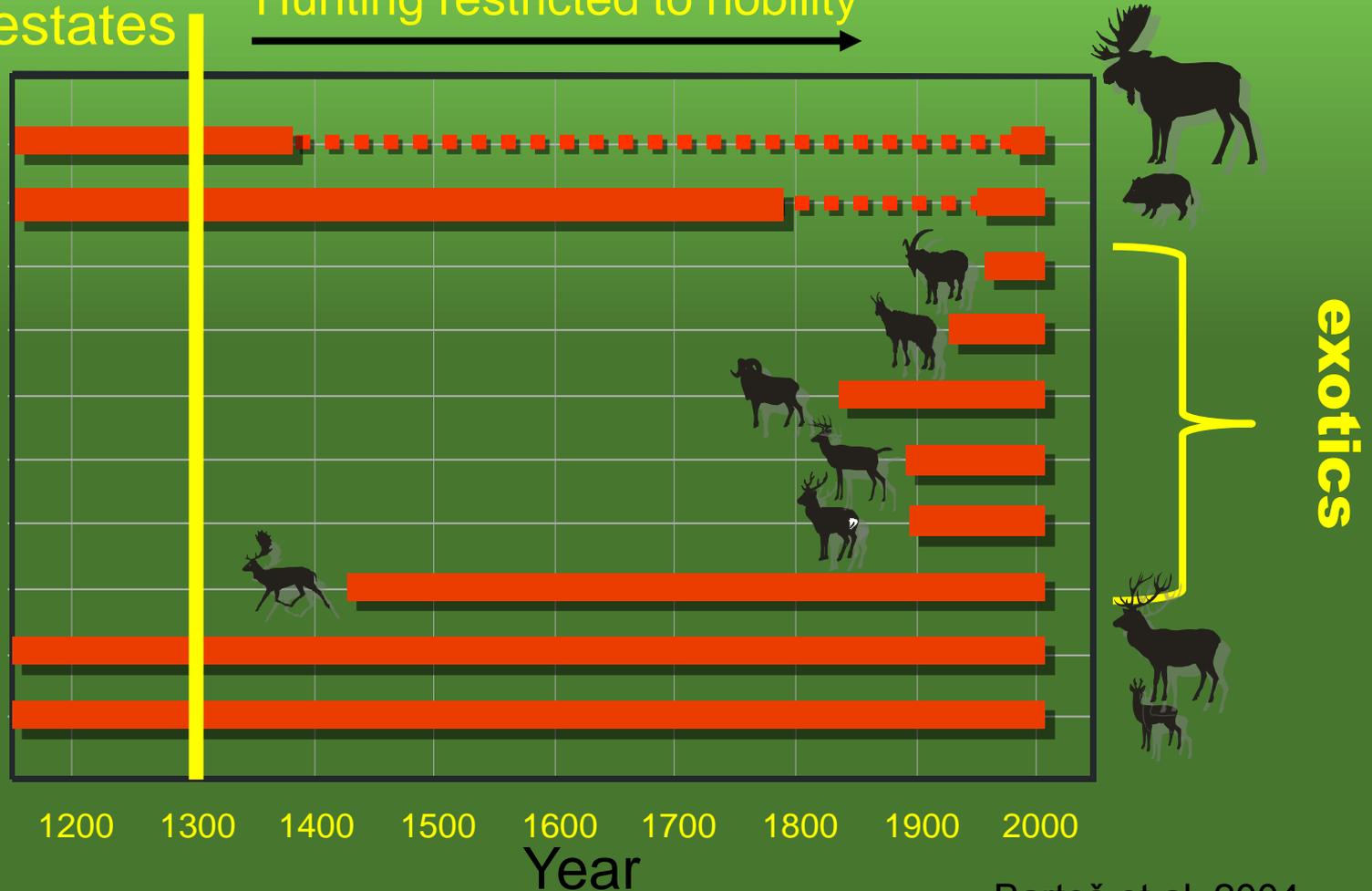
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- since 1970s modern deer farming industry has expanded in New Zealand and Europe.



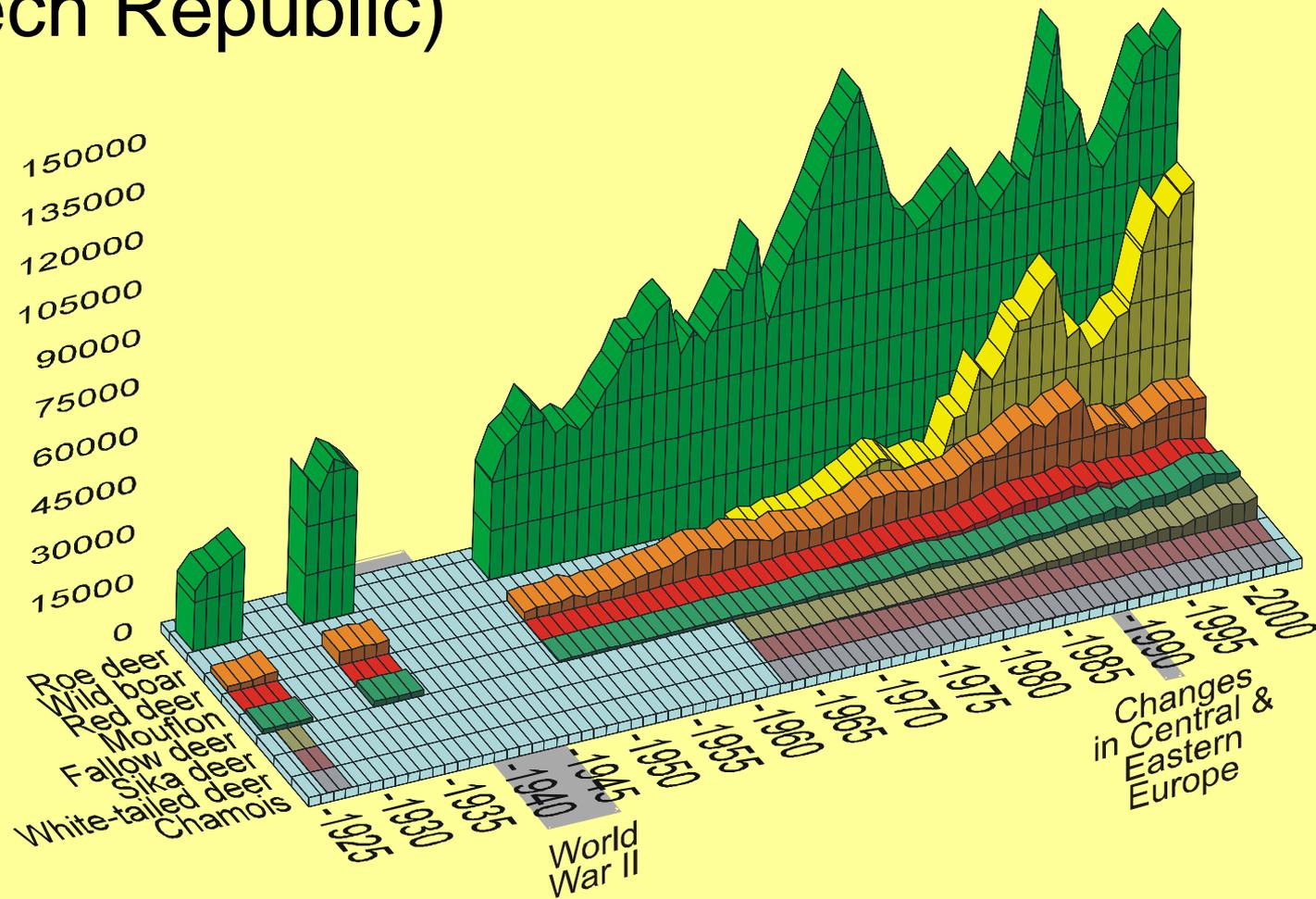
# History of occurrence of large game in the Czech Republic

First fenced hunting estates

Hunting restricted to nobility



# Development of gunting bag for large game (Czech Republic)



Bartoš et al, 2004



FACE

## Federation of Associations for Hunting and Conservation of the EU

- Founded in 1997
- Represents 36 European countries (27 EU + 9)
- Membership of 7 mill. hunters for conservation in Europe, but ↑ damages to crop and forests- overpopul.
- Estimated wild game population (farms excluded)

Roe deer (*Capreolus capreolus*): 10 mill. spec. (Lecocq, 2011)

Red deer (*Cervus elaphus*): 2-3 mill. spec.

Wild boar (*Sus scrofa*): 10-15 mill. spec.



- Established in 1990
- Represents 17 European countries.
- Membership of roughly 10,000 European farmers keeping stock of 280,000 deer- mainly red and fallow deer (*Dama dama*).

If we include Spain with fenced game estates- plus 3,000 operations with 600,000 large game spec.

- Europe is not self sufficient- limited production

# Ideal intensive farm

Large paddocks for breeding groups of 40 to 60 females. Driving lines between paddocks-connected to to handling area



# Ideal intensive farm

## Handling facilities and restrain box



# Ideal intensive farm

## Processing unit



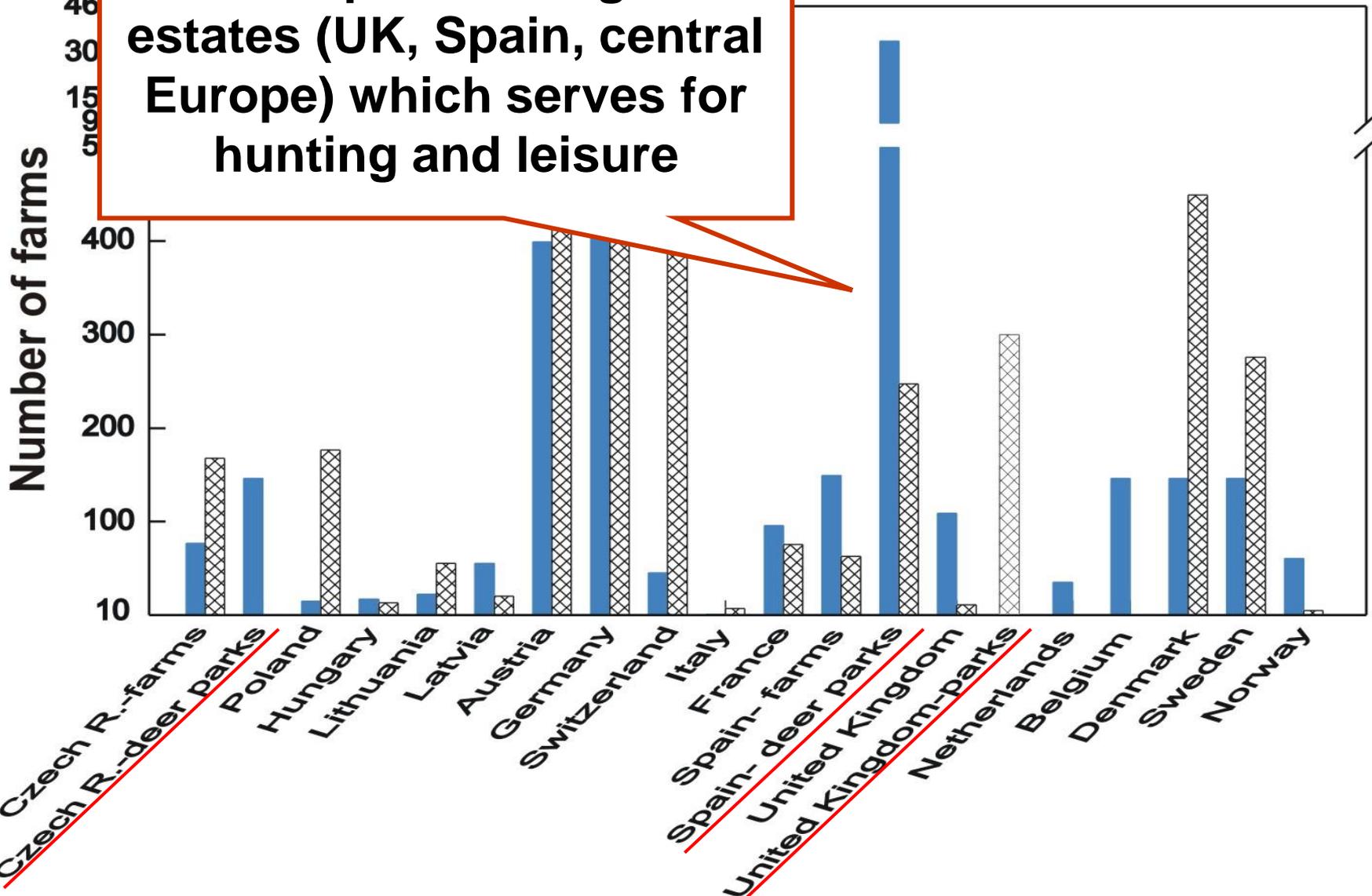
# Ideal fenced game estate



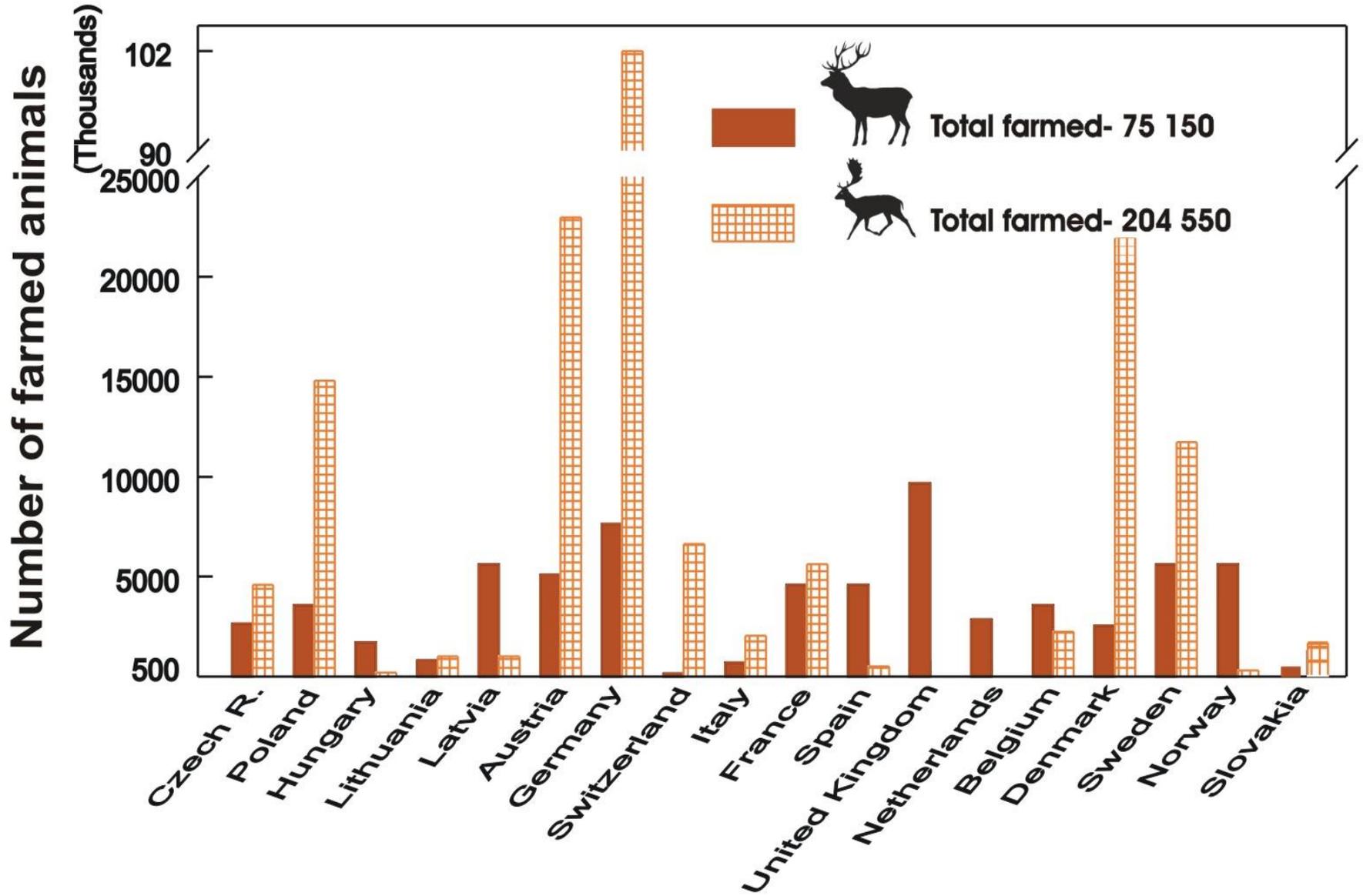
Has intensive part for game selection and extensive for breeding, visitors and hunting.

# Number of deer farms and game estates- by countries

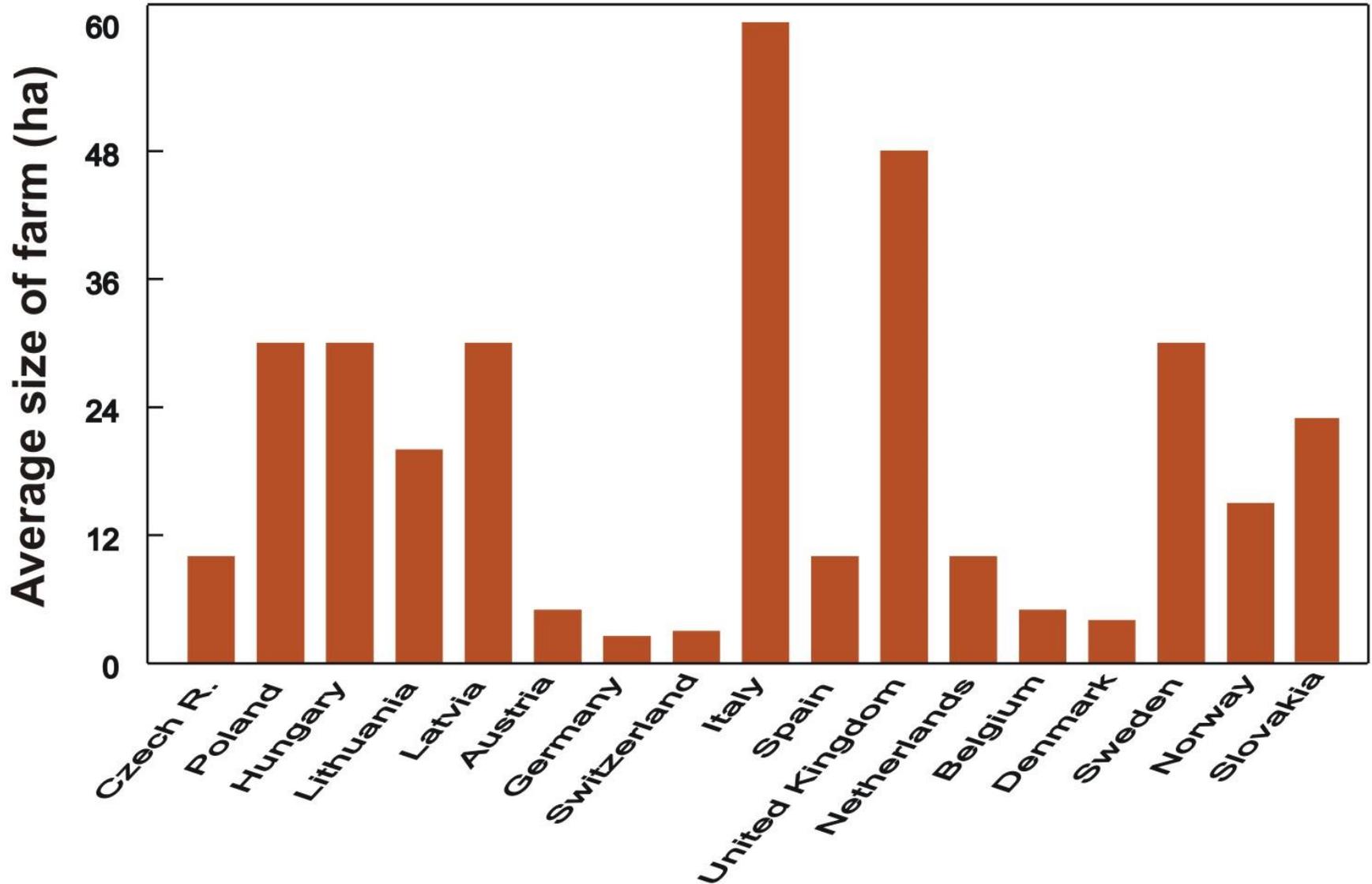
... but fenced deer is also at deer parks and game estates (UK, Spain, central Europe) which serves for hunting and leisure



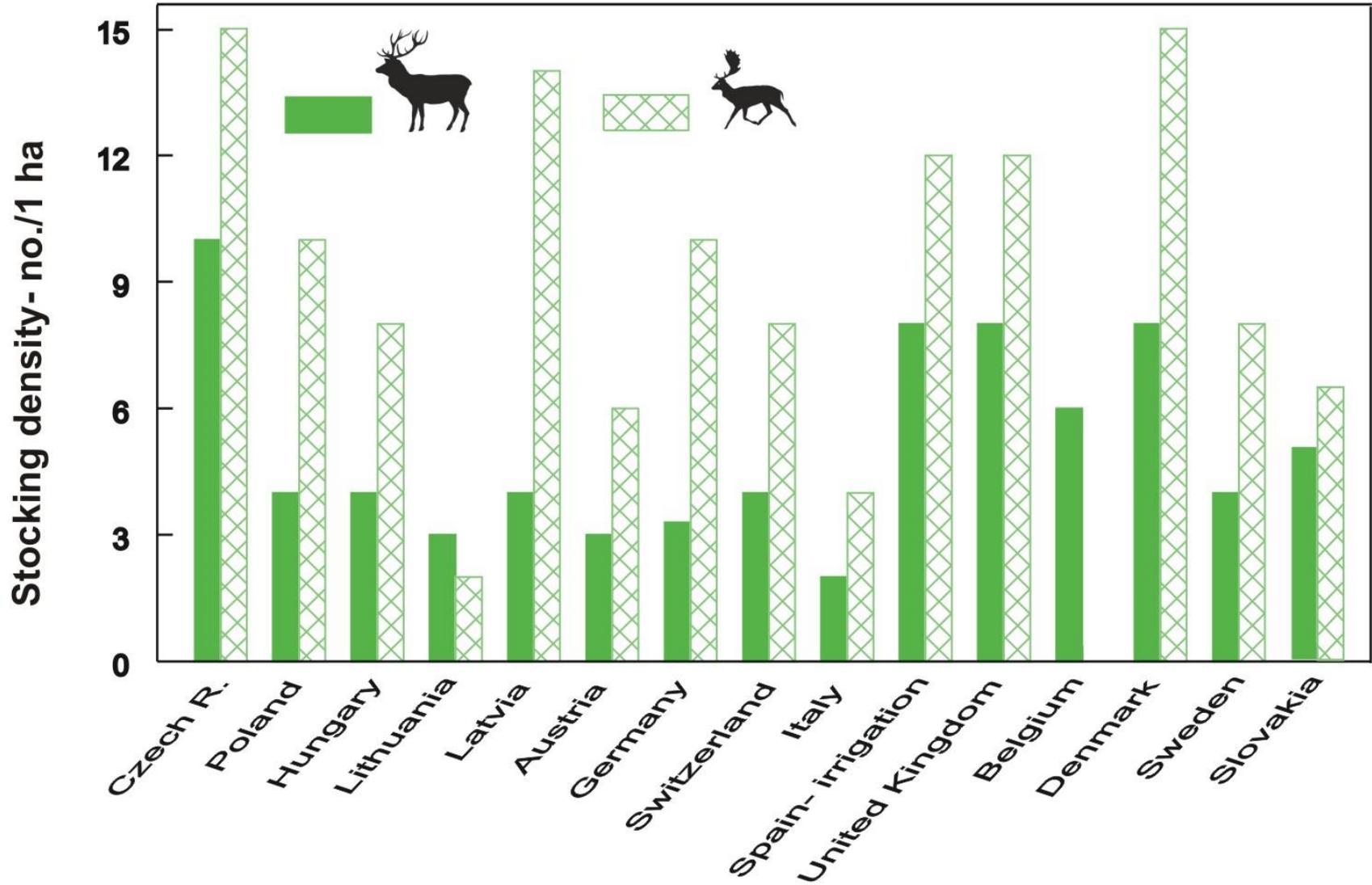
# Number of farmed deer in Europe (2010)



# Average size of farm (2010)



# Stocking density (2010)



# Incentives and goals of deer husbandry



... status symbol



... venison  
production...

hunting...

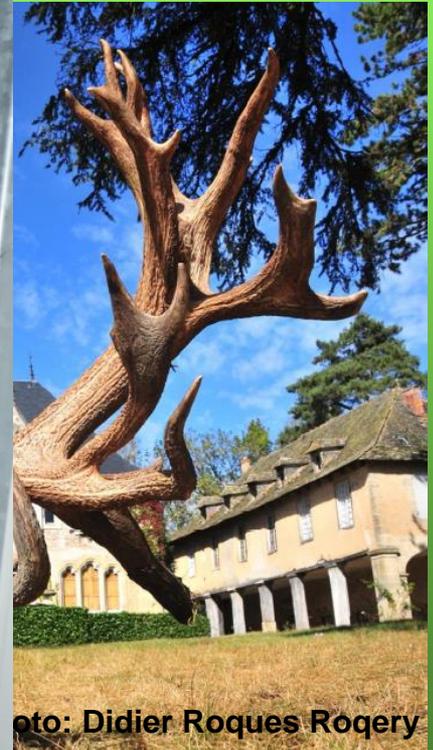


Photo: Didier Roques Roqery

# Can we find differences in deer farming and ranching practise?

Deer farmers must follow the same rules for husbandry and slaughter as other LIVESTOCK farmers. At game estates animals are considered as WILD and in many countries treated as wild.



# How deer farms differ across Europe?



Spring time close to Ciudad Real, Spain



Early spring in Prague, Czech Republic

Matter of environmental and climatic conditions...

... of various  
vegetation cover...



Open meadows



Close forests



Indoor



Outdoor

... of overwintering  
practice at farms...

... of slaughter, killing practice...

Captive farm

bolt at



Free bullet at farm and only



and cultural differences in attitude to game species...

# Scale of deer farming industry worldwide-

estimated up to 5 mill. individuals



# Why deer is farmed in Europe?

Austria	<b>Venison</b> (95%), trophy (5%)
Belgium, Denmark	<b>Venison</b> , hobby, agrotourism
Germany, Czech Rep.	<b>Venison</b> , to sell stock, hobby
Poland	<b>To sell stock</b> , subsidies
France	<b>Venison</b> , agrotourism
UK, Netherlands	<b>Venison</b> , to sell stock, trophy
Italy	<b>Venison</b> , hobby, trophy, agrotourism
Spain, Latvia, Lithuania	<b>Trophy</b> , to sell stock, represent., venison
Netherlands	<b>Venison</b> , to sell stock, trophy
Sweden, Norway	<b>Venison</b>
Switzerland	<b>Venison</b> , hobby
Slovakia	<b>To sell stock</b> , trophy, venison

# Quality attributes and composition of meat from red deer (*Cervus elaphus*), fallow deer (*Dama dama*) and Aberdeen Angus and Holstein cattle (*Bos taurus*)

Daniel Bureš,<sup>a\*</sup> Luděk Bartoň,<sup>a</sup> Radim Kotrba<sup>a</sup> and Josef Hák<sup>b</sup>

*J Sci Food Agric* 2015; **95**: 2299–2306

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## Chemical composition of beef and venison

	Angus <i>LSM</i>	Holstain <i>LSM</i>	Fallow deer <i>LSM</i>	Red deer <i>LSM</i>	<i>P</i> value
Dry matter (g/kg)	271.5 <sup>A</sup>	266.3 <sup>AB</sup>	255.6 <sup>C</sup>	257.3 <sup>BC</sup>	<0.0001
Crude protein (g/kg)	214.1 <sup>A</sup>	218.7 <sup>A</sup>	227.9 <sup>B</sup>	221.4 <sup>B</sup>	0.0013
Total fat (ether extract) (g/kg)	36.2 <sup>A</sup>	27.7 <sup>A</sup>	7.2 <sup>B</sup>	8.1 <sup>B</sup>	<0.0001
Total collagen (g/kg)	4.56 <sup>A</sup>	4.59 <sup>A</sup>	3.16 <sup>B</sup>	2.87 <sup>B</sup>	<0.0001
Soluble collagen (%)	24.89 <sup>A</sup>	22.31 <sup>A</sup>	40.32 <sup>B</sup>	39.16 <sup>B</sup>	<0.0001
Shear force (raw)	55.27	57.10	47.84	45.72	0.0429

A,B,C

Values with different superscripts differ at  $P < 0.05$

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## Fatty acid profiles, sums (mg/100g meat) of beef and venison

	Angus <i>LSM</i>	Holstain <i>LSM</i>	Fallow deer <i>LSM</i>	Red deer <i>LSM</i>	<i>P</i> value
SFA	1737.10 <sup>A</sup>	1430.05 <sup>A</sup>	534.10 <sup>B</sup>	708.68 <sup>B</sup>	<0.0001
MUFA	1348.57 <sup>A</sup>	1205.12 <sup>A</sup>	315.62 <sup>B</sup>	436.23 <sup>B</sup>	<0.0001
PUFA	287.64 <sup>A</sup>	275.41 <sup>A</sup>	<b>356.62<sup>AB</sup></b>	<b>454.42<sup>B</sup></b>	0,0159
SUMA n6	226.48	226.73	304.31	342.16	0,0617
SUMA n3	61.17 <sup>A</sup>	48.68 <sup>A</sup>	52.31 <sup>A</sup>	<b>112.26<sup>B</sup></b>	<0.0001
PUFA/SFA	0.17 <sup>A</sup>	0.21 <sup>A</sup>	<b>0.68<sup>B</sup></b>	<b>0.81<sup>B</sup></b>	<0.0001
MUFA/SFA	0.77 <sup>A</sup>	0.85 <sup>A</sup>	0.60 <sup>B</sup>	0.63 <sup>B</sup>	<0.0001
N6/N3	3.80 <sup>A</sup>	4.69 <sup>B</sup>	5.84 <sup>C</sup>	2.99 <sup>A</sup>	<0.0001

A,B,C

Values with different superscripts differ at P<0.05

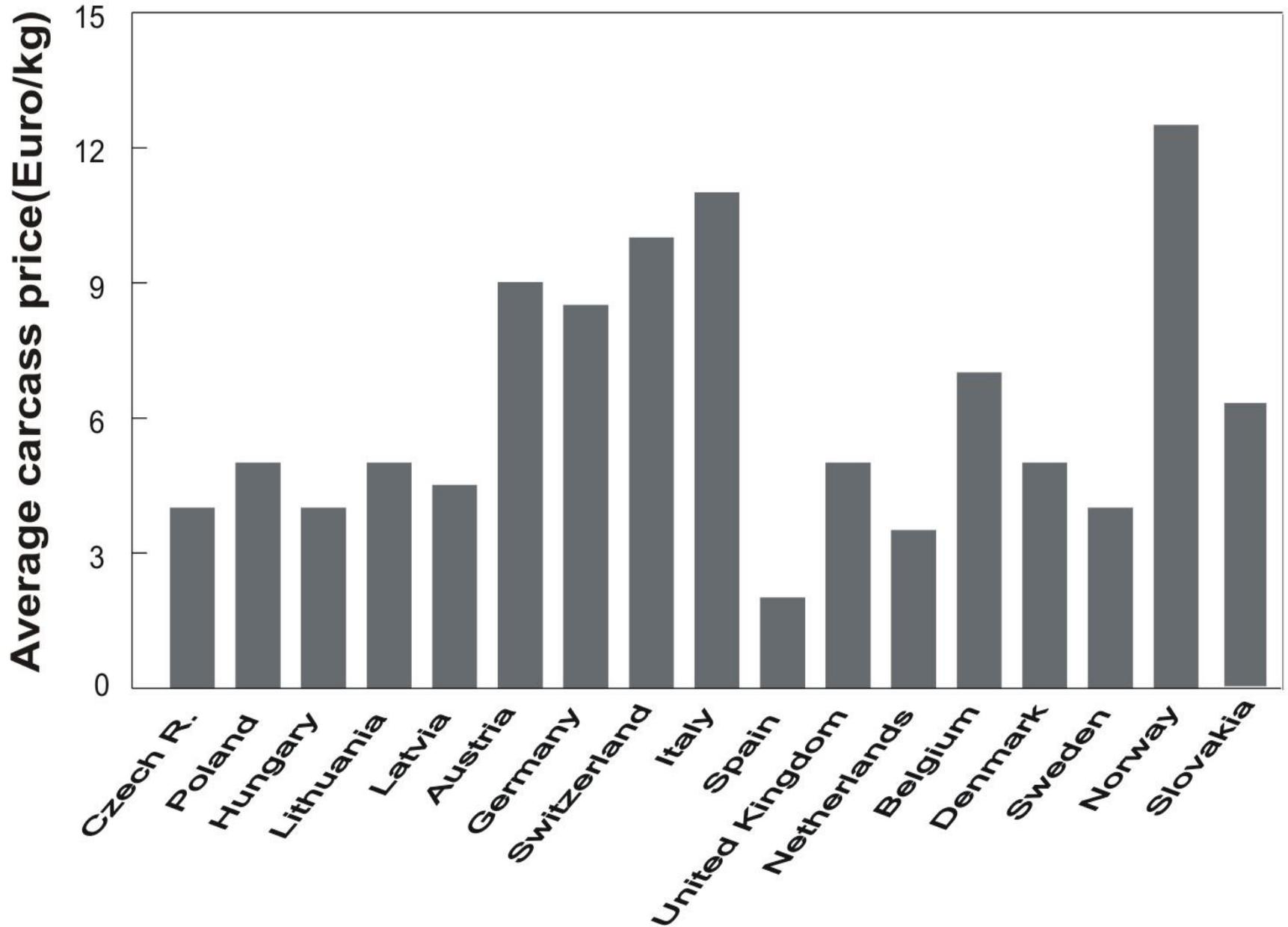
# Not just composition, but also red and fallow deer meat was:

- more tender
- less chewy
- equally juicy

and generally better accepted (overall liking) than beef of Angus and Holstain.

(Bureš et al, 2015)

# Carcass prices of farmed deer (2010)



# Challenges

Intensity and meat  
production  
competitiveness with  
New Zealand?



Over 2,800 farmers farming approximately  
1.1 million deer (DINZ, 2014)

Photo Tony Pearse

Table 1: Value of New Zealand deer product exports year ending September (NZD FOB)

	2012	2013(p)	% Change
Venison	\$198,063,483	\$183,254,984	-7%
Velvet	\$28,035,836	\$23,791,363	-15%
Co-products	\$19,564,130	\$21,455,745	10%
Leather	\$17,473,884	\$18,206,182	4%
Hides	\$5,396,747	\$6,342,587	18%
<b>Total</b>	<b>\$268,534,080</b>	<b>\$253,050,861</b>	<b>-6%</b>

Source: Statistics New Zealand

Table 2: Deer industry export volumes, year ending September

	2012	2013 (p)	% Change
Venison (kg)	15,271,490	15,428,241	1%
Velvet (kg)	178,866	187,260	5%
Co-products (kg)	4,396,292	4,781,624	9%
Leather (sq metre)	239,032	240,592	1%
Hides (num)	186,701	205,088	10%

Source: Statistics New Zealand

8 European countries form  
76 % of total export of New  
Zealand venison

Table 3:  
September

year ending

				Volume (tonnes)		
	2012	2013	% change	2012	2013	% change
Germany	\$66,320	\$61,700	-7%	5,414	5,284	-2%
Belgium	\$25,654	\$20,935	-18%	1,523	1,436	-6%
Netherlands	\$24,007	\$20,173	-16%	1,515	1,268	-16%
United States	\$16,780	\$16,793	0%	1,607	1,600	14%
Switzerland	\$15,024	\$15,893	6%	919	919	12%
United Kingdom	\$7,497	\$7,963	6%	879	879	26%
Sweden	\$4,893	\$6,211	27%	539	539	35%
Finland	\$8,556	\$6,020	-30%	1,119	898	-20%
France	\$9,156	\$5,952	-35%	593	435	-27%
Canada	\$2,835	\$4,214	49%	202	316	57%
<b>Total</b>	<b>\$198,063</b>	<b>\$183,255</b>	<b>-7%</b>	<b>15,271</b>	<b>15,428</b>	<b>1%</b>

Source: Statistics New Zealand

# Challenges

Damages to crop and forrest stands-  
overpopullated areas



# Game quality- trophy value

NORTON II AT 7 YEARS



WARNHAM

Outstanding Sire of 2013 and sons suggest he will be for 2015.



Sovereign II hard antler

Semen for sale from Sovereign II

\$300.00 + GST a straw

Sovereign II scored 741 when cut, 63 points, 30kg

Winner hard antler competition at 2013 Nationals

Deer Industry New Zealand, 2014



Opportunities- Game in agroforestry systems

Improvement of environment in agriculture and forest land- acts for biodiversity



Wildlife Estate Label- initiative by European Landowners' Organisation



**Thank for your attention**