

Intensively spreading forest mammals in Hungary

Krisztián Katona, PhD

Szent István University
Institute for Wildlife Conservation
e-mail: Katona.Krisztian@mkk.szie.hu

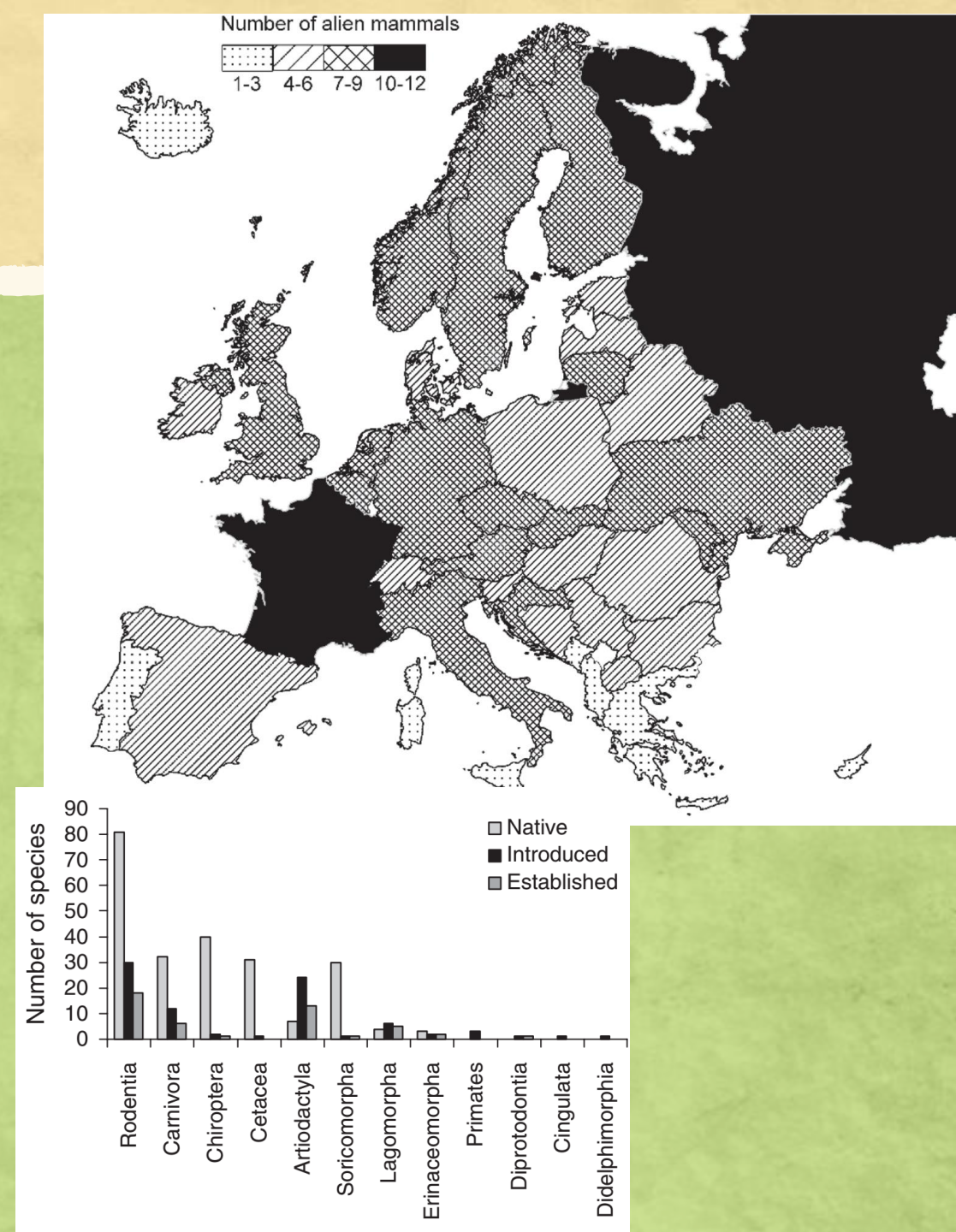


Invasive non-native mammals in Europe

- **Keller et. al. 2011:** Invasive species in Europe: ecology, status, and policy. Environmental Sciences Europe, 23:23
- Species referred as **invasive**:
 - **it spreads widely and causes measurable environmental, economic, or human health impacts**
- **Hunted mammals** are more frequently invasive ← they have been more frequently introduced
- But their establishment success is not necessarily higher than that of other species
(The same is true for mammals with large native ranges)
- The dominant **pathways of mammal introduction** were:
 - Intentional introduction as commodity (for hunting, 'fauna improvement', fur farming, as pets, or for zoos), then either intentional release or accidental escape
- **Ecological impacts:** predation/herbivory, competition, hybridization with native species.
- **Economic impacts:** effects on livestock, plant production and forestry

Invasive non-native mammals in Europe

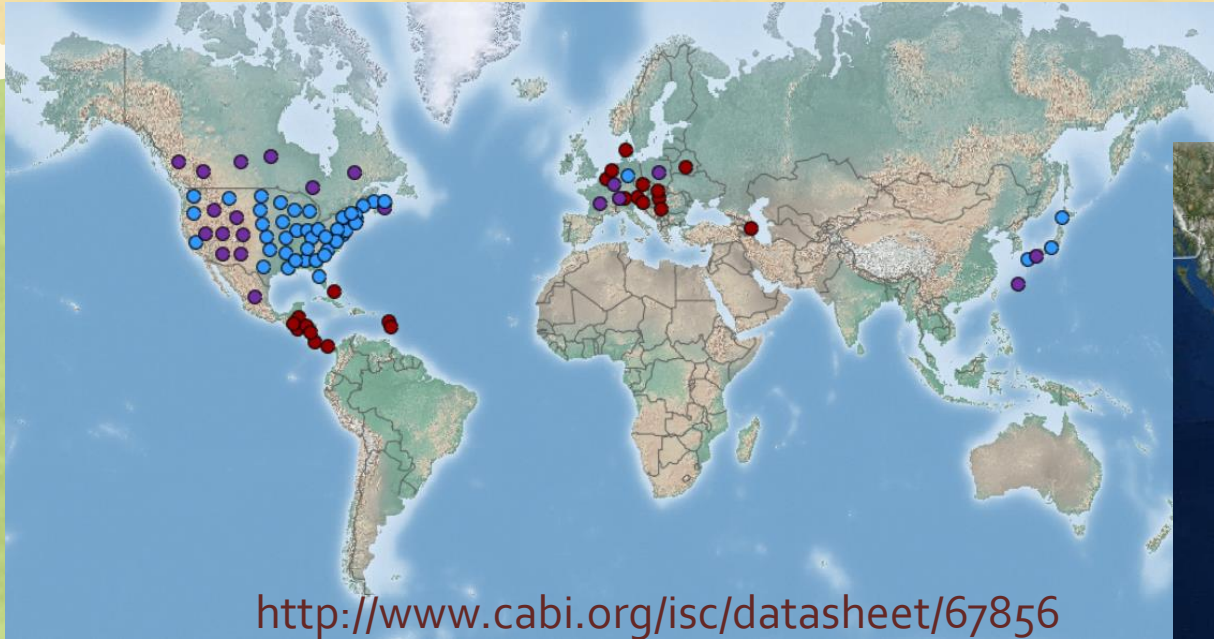
- **Genovesi et. al. 2009:**
Alien mammals of Europe. Handbook of Alien Species in Europe pp 119-128.
- **DAISIE database includes records of 88 mammal species introduced since 1500 in Europe**
- **64 (75%) alien to Europe**
- **20 (25%) native in Europe**
- **33 (52%) of alien and 14 (70%) of native introduced species have established**



Northern raccoon (*Procyon lotor*)



Photo: Lynette Elliott

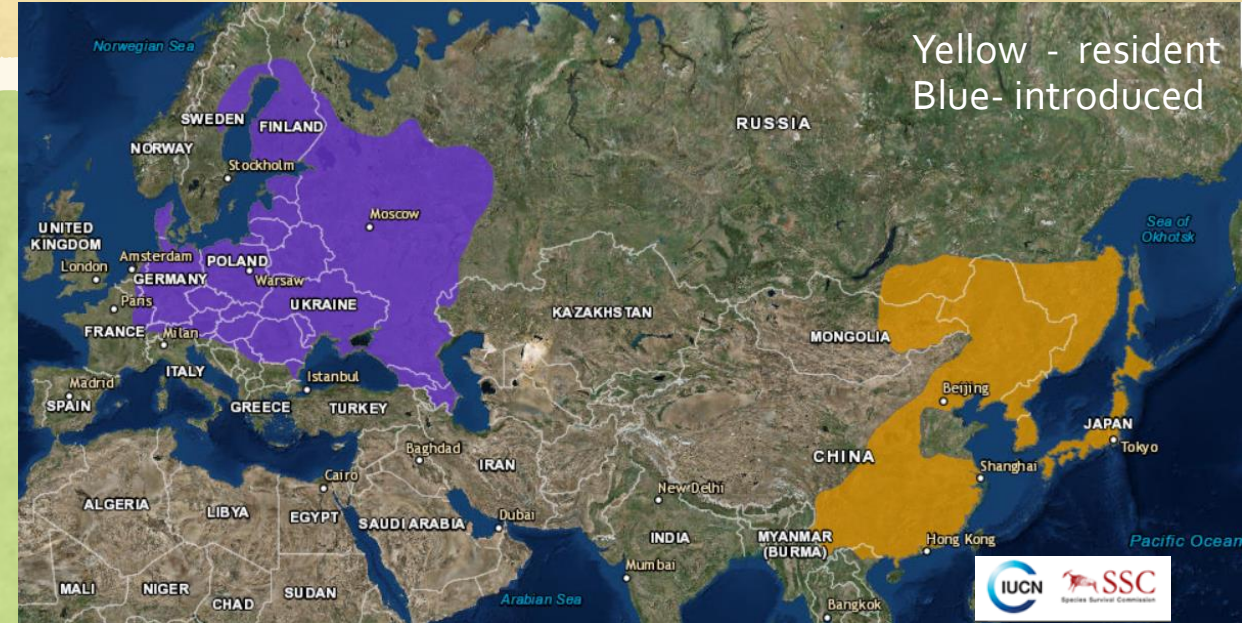
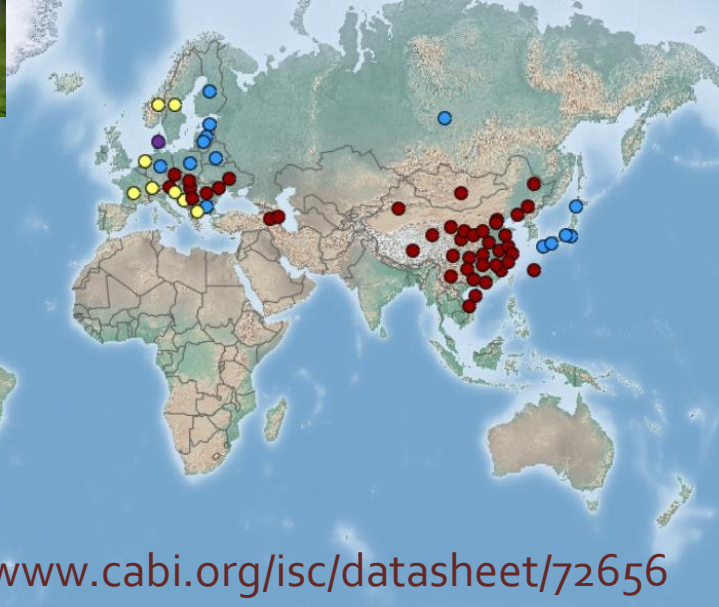


Yellow - resident

- Originally a North and Central American species
- Introductions since the 1930s into Germany, the Russian Federation,
- Many subsequent escapes by farmed animals in various parts of Europe
- It has resulted in expanding European and Central Asian populations



Raccoon dog (*Nyctereutes procyonoides*)



- The **native range** of this species:
 - ✓ extends from northern Indochina
 - ✓ through the eastern provinces of China and the Korean Peninsula
 - ✓ to the south-east corner of Russia and Mongolia.
- It was **introduced** in the first half of the 20th century to European parts of the former Soviet Union
- Since then the species has become widespread in northern and eastern Europe
- Recently expanding e.g. to Northern Finland, Macedonia, Spain

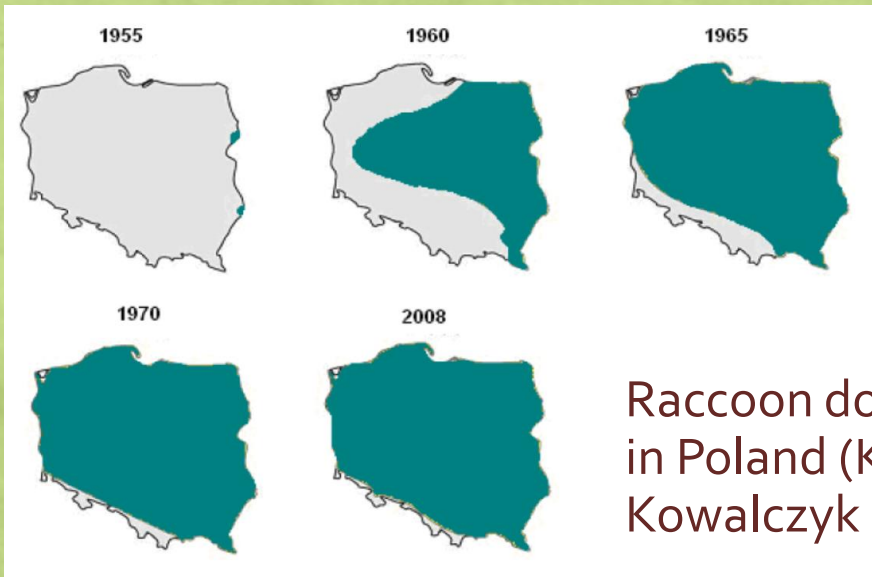
Northern raccoon and raccoon dog in Europe

Country	Not found	Not established	Rare	Local	Common	Very common	Not known
Austria			X				
Denmark		X					
Estonia	X						
European part of Russia			X				
Finland	X						
Faroe Islands	X						
Germany					X		
Greenland	X						
Iceland	X						
Latvia	X						
Lithuania				X			
Norway		X					
Poland				X			
Sweden		X					

Raccoon

Country	Not found	Not established	Rare	Local	Common	Very common	Not known
Austria			X				
Belarus					X		
Belgium							X
Denmark				X			
Czech Republic					X		
Estonia						X	
European part of Russia					X		
Finland						X	
Faroe Islands	X						
Germany					X		
Greenland	X						
Iceland	X						
Latvia					X		
Lithuania					X		
Netherlands		X					
Norway		X					
Poland					X		
Slovakia							X
Sweden			X				

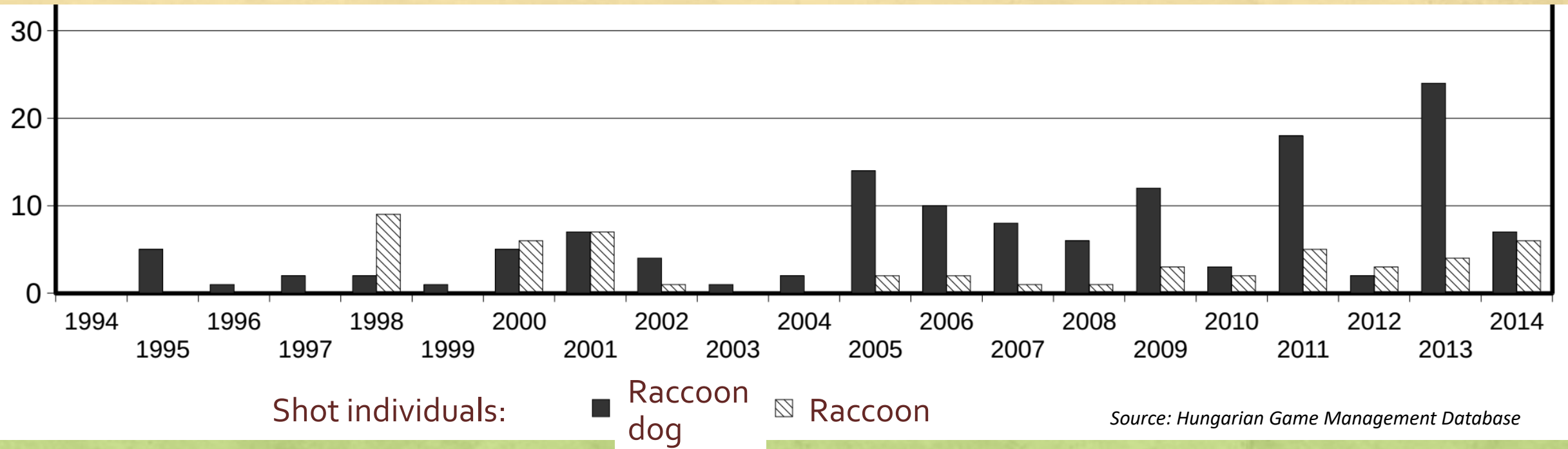
Raccoon dog



2017

Raccoon dog spreading in Poland (Kauhala and Kowalczyk 2011)

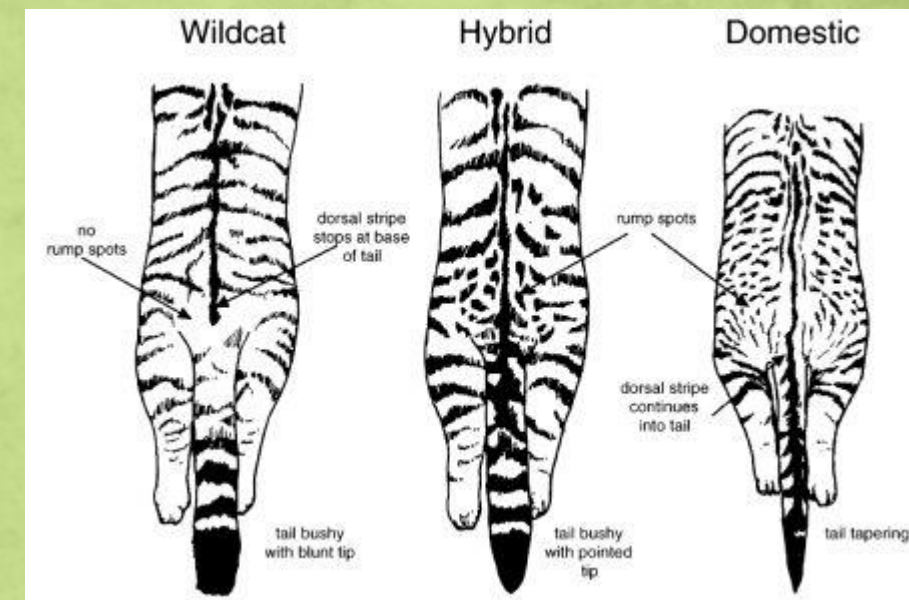
Northern raccoon and raccoon dog in Hungary



- In 2015: 6 and 8
- In 2016: 3 and 2



Feral and stray cats (*Felis catus*)



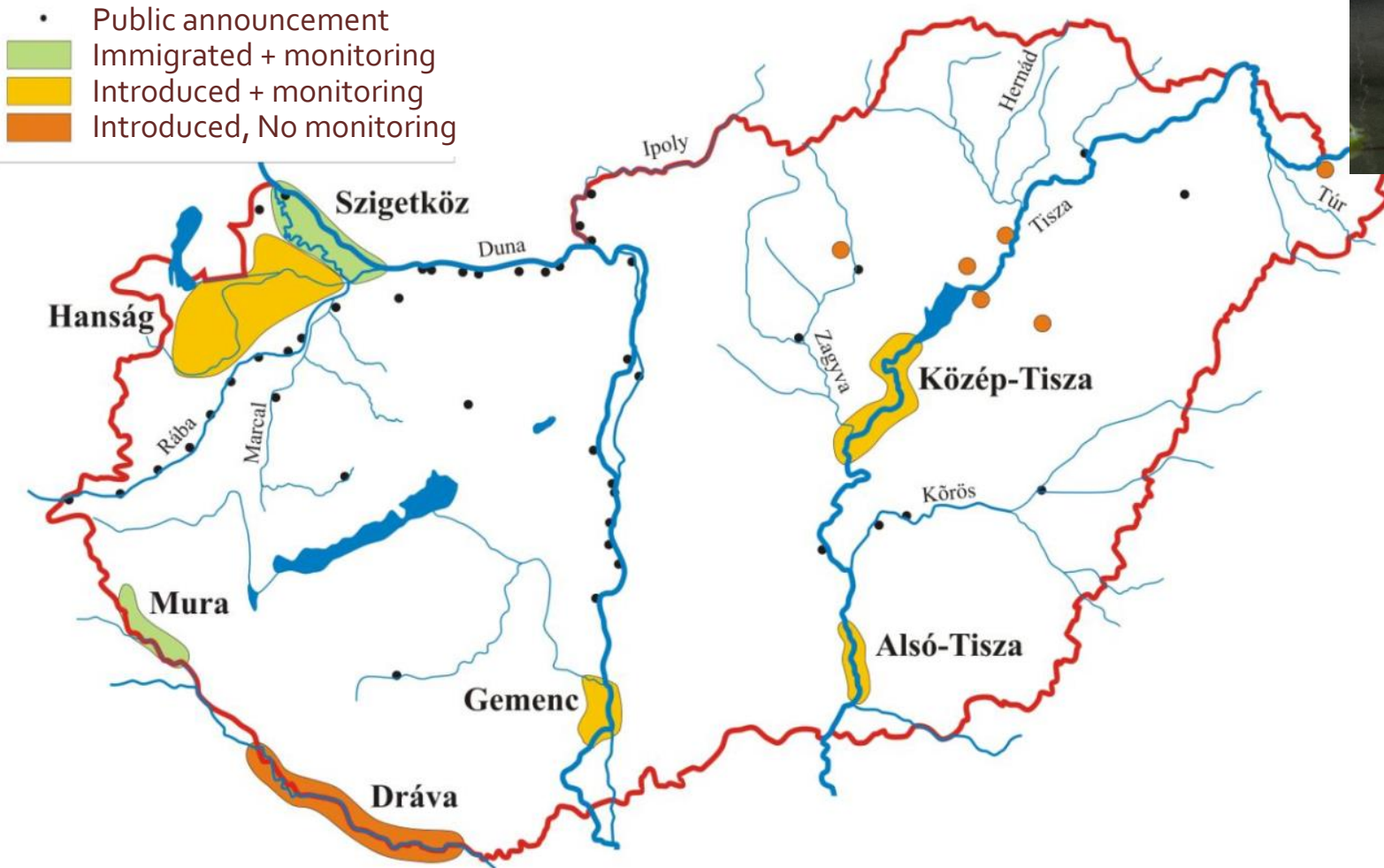
Source: Scottish Wildcat Association

- Based on survey of 144 Hungarian protected areas feral cats are considered as the most serious threat among invasive species
- Hybridization with wild cat (*Felis silvestris*) is a serious problem

Eurasian beaver (*Castor fiber*) - reintroduction in Hungary



Photo: Erika Juhász



- The last individual was shot
In 1854
- Individuals appeared
in 1985-1986 in Szigetköz
(probably some reintroduced
individuals from Austria)
- Between 1996-2008 beaver
reintroduction program by WWF
- 234 individuals were released

(Bajomi, 2011)

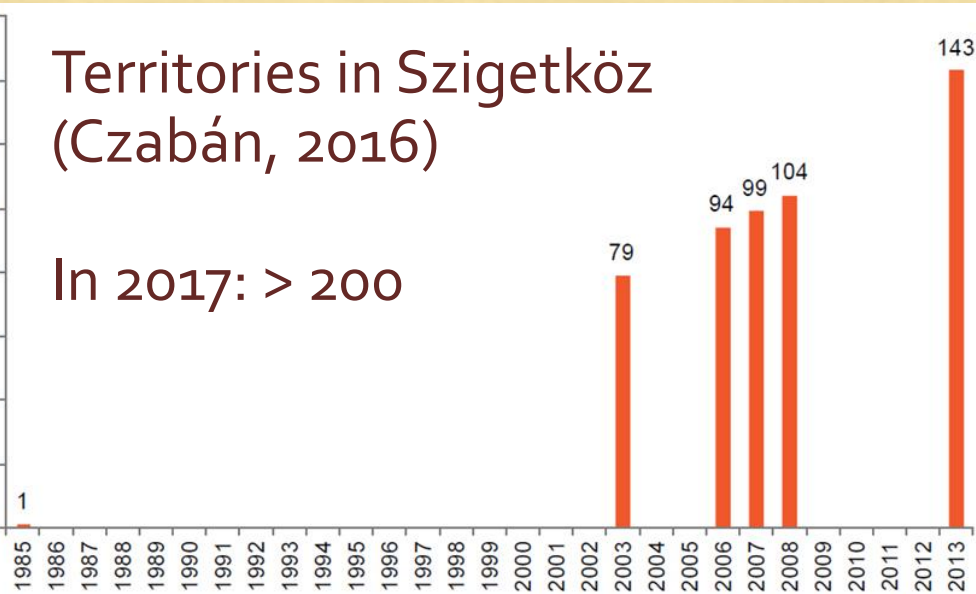
Eurasian beaver in Hungary – spreading and population increase



Photos: Erika Juhász

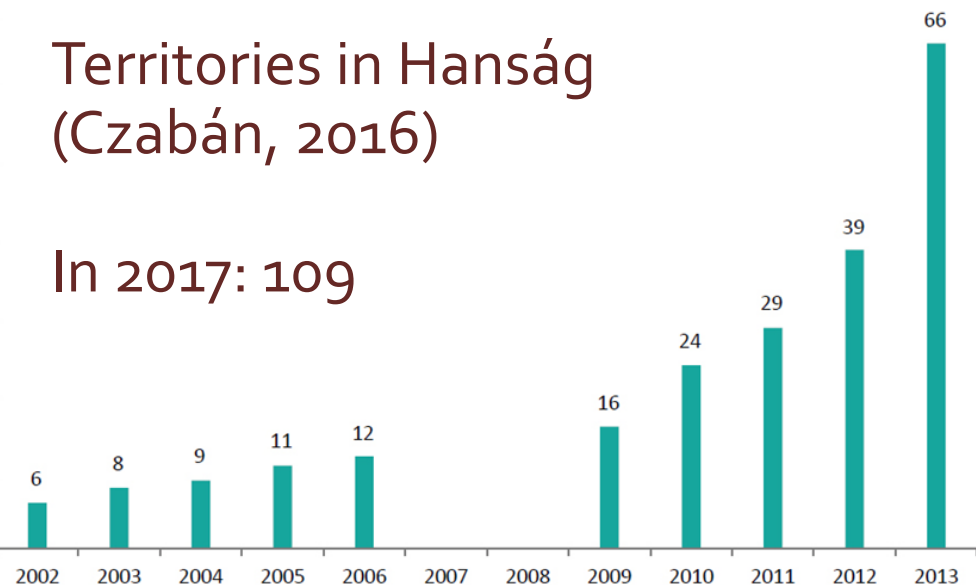
Territories in Szigetköz (Czabán, 2016)

In 2017: > 200



Territories in Hanság (Czabán, 2016)

In 2017: 109



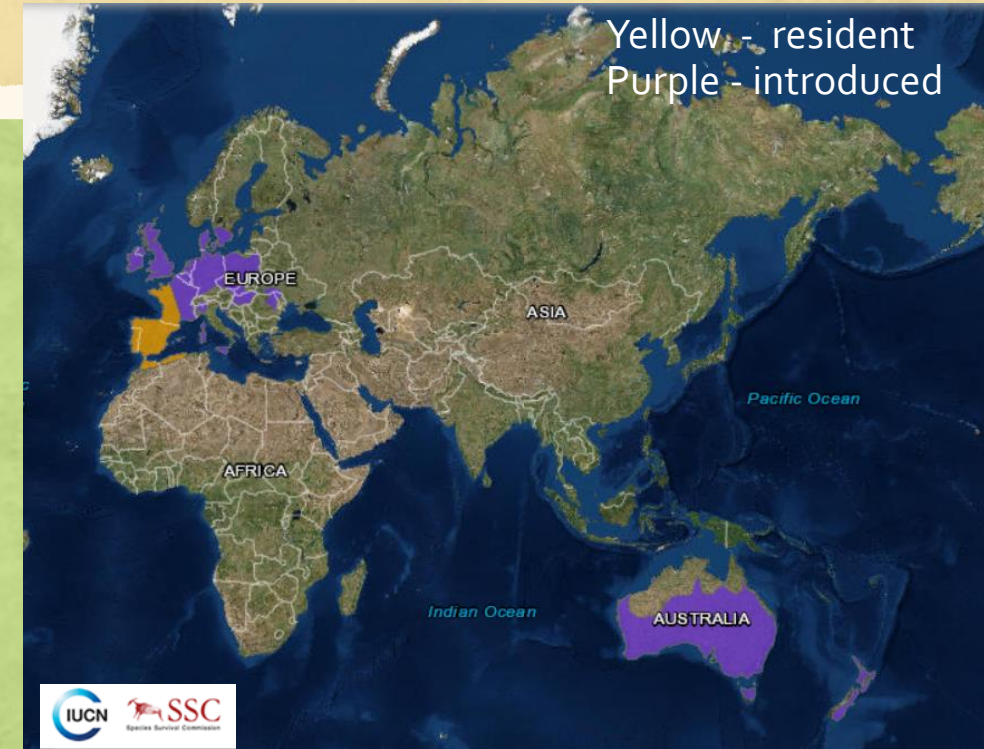
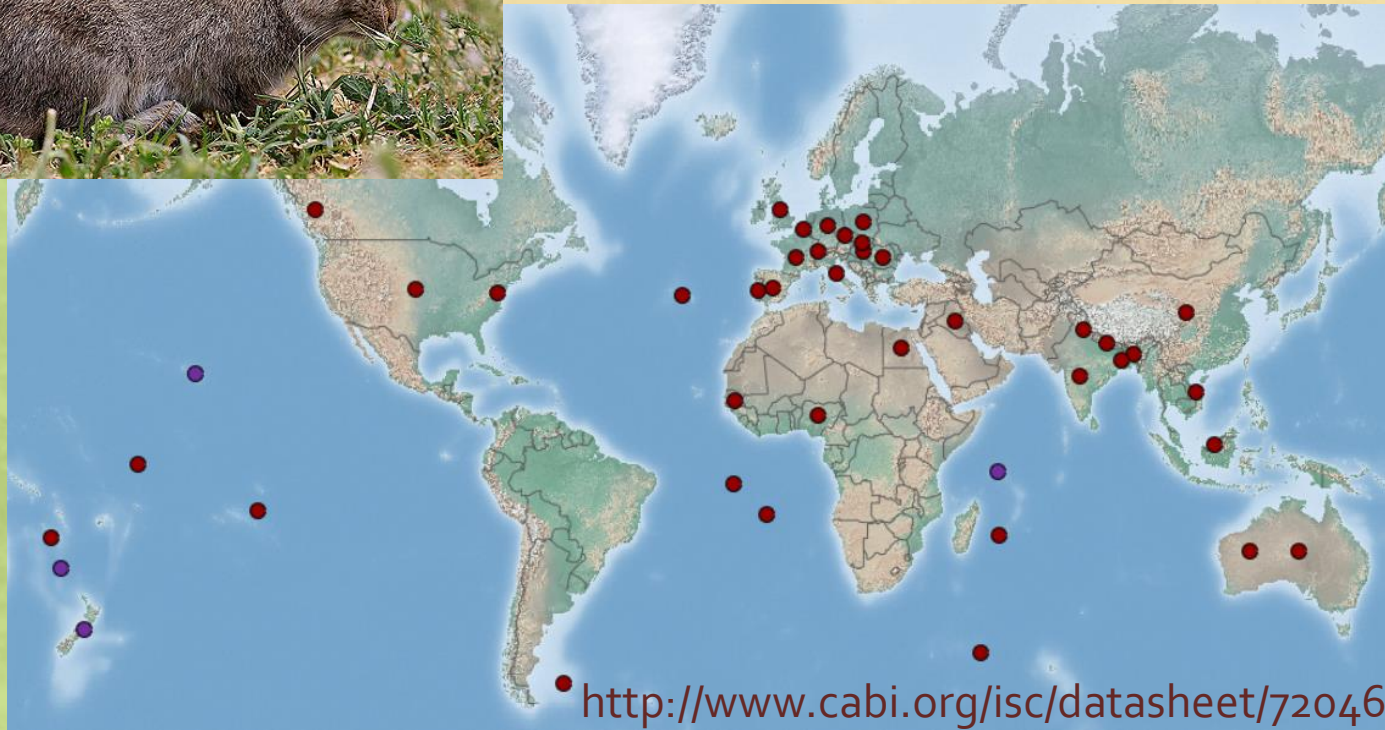
In the whole country:

- Haarberg (2007): 492 ind.
- Bajomi (2011): 718-905 individuals
- Czabán (2016): 2500-3000 individuals
- Juhász and Czabán (2017): 4000-5000 individuals
- Occurs along all our rivers, but in some regions also along canal systems





European rabbit (*Oryctolagus cuniculus*)



Rabbit is a widespread colonizer and is considered a pest outside its natural range

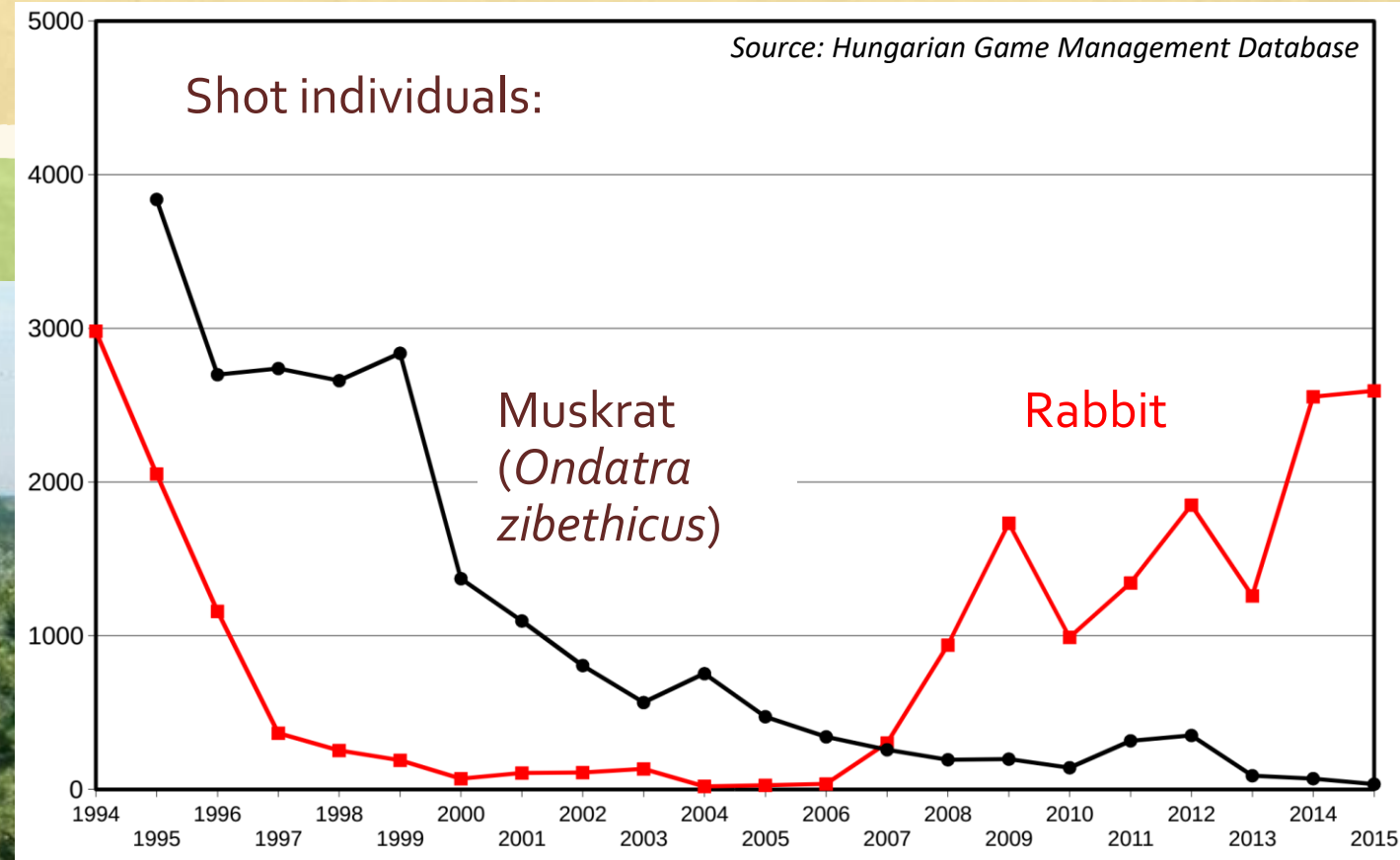
But within its natural range it has declined an estimated 80-95% since 1950

Native: Portugal; Spain; France; Gibraltar; Morocco; Algeria

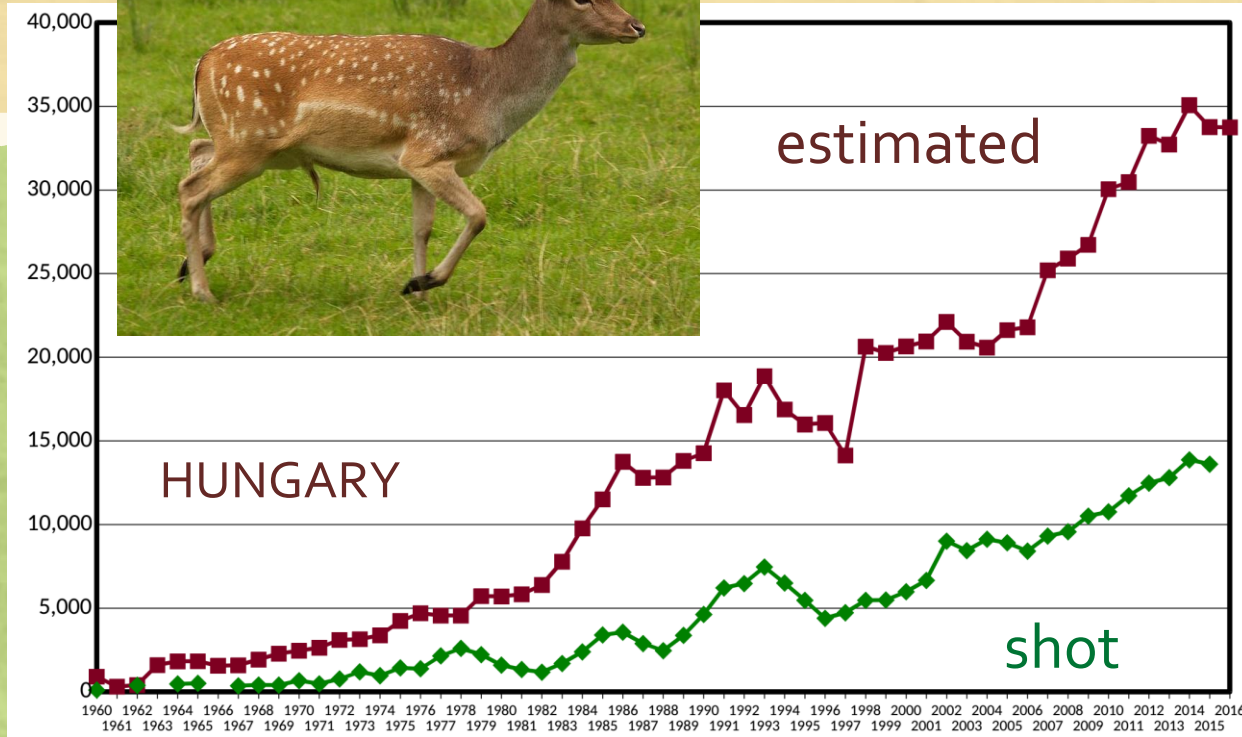
Introduced: e.g. Albania; Argentina; Australia; Austria; Belgium; Bulgaria; Chile; Croatia; Czech Republic; Denmark; Germany; Greece; Hungary; Ireland; Italy; Netherlands; New Zealand; Norway; Poland; Romania; Russian Fed.; Slovakia; Slovenia; South Africa; Sweden; Switzerland; United Kingdom; USA

European rabbit as a keystone species in Hungary

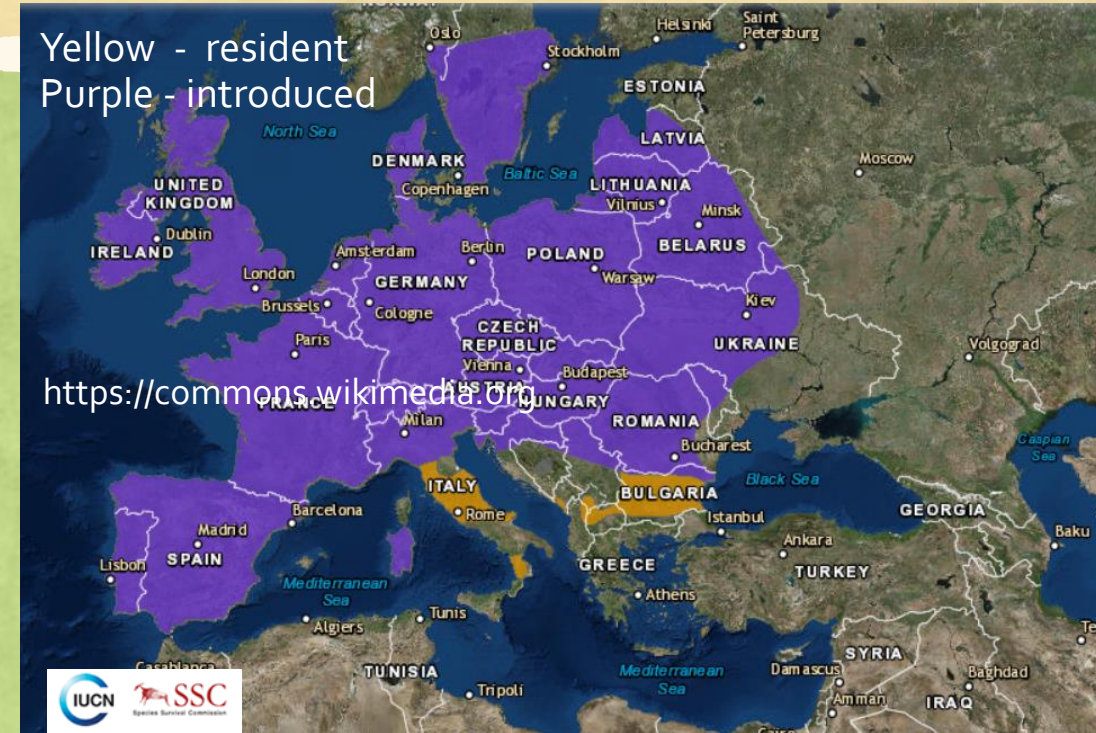
Bugac Juniper forest



Fallow deer (*Dama dama*)



Source: Hungarian Game Management Database

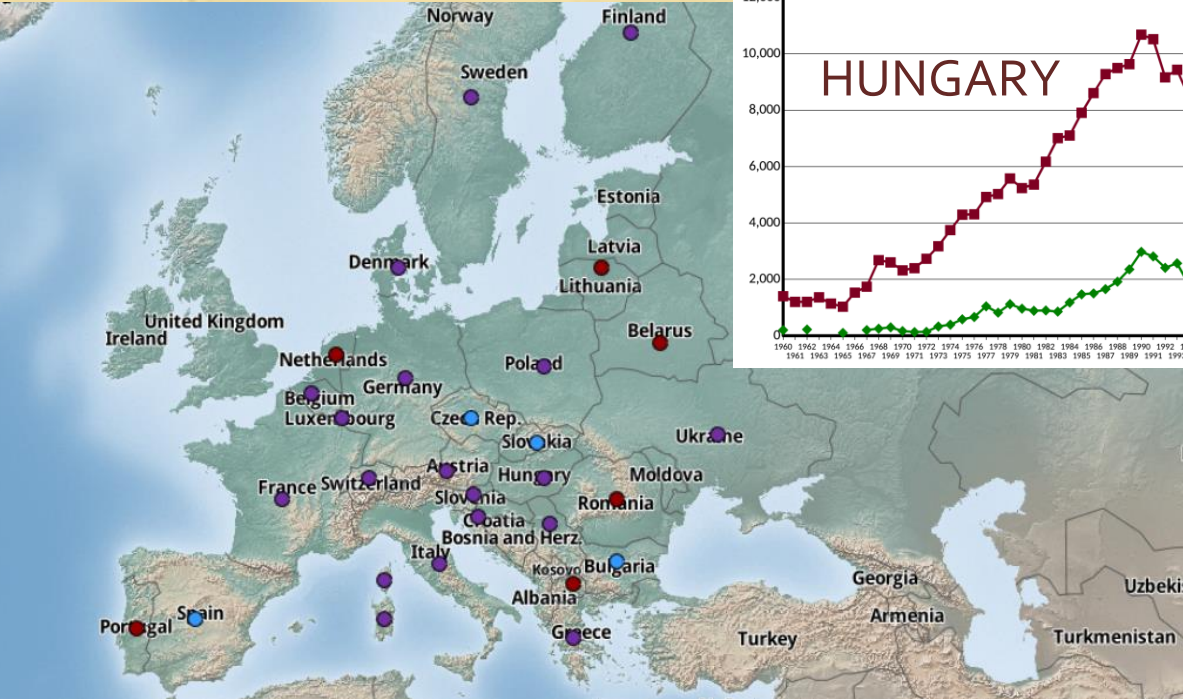


It is a widespread species in Europe: introductions by the Phoenicians, Romans, and Normans, and recently others
Most European populations are fenced

Native: Turkey

Introduced: e.g. Argentina; Austria; Belgium; Canada; Chile; Czech Republic; Denmark; Estonia; Fiji; Finland; France; Germany; Hungary; Ireland; Latvia; Lithuania; Netherlands; New Zealand; Norway; Peru; Poland; Portugal; Romania; Russian Fed.; Slovakia; South Africa; Spain; Sweden; Switzerland; Ukraine; United Kingdom; USA

A detailed photograph of a mountain goat (Capra ibex) standing on a mossy tree stump. The goat has thick, brown and white fur and large, thick, curved horns. It is looking towards the left. The background is a blurred forest scene with trees and foliage.

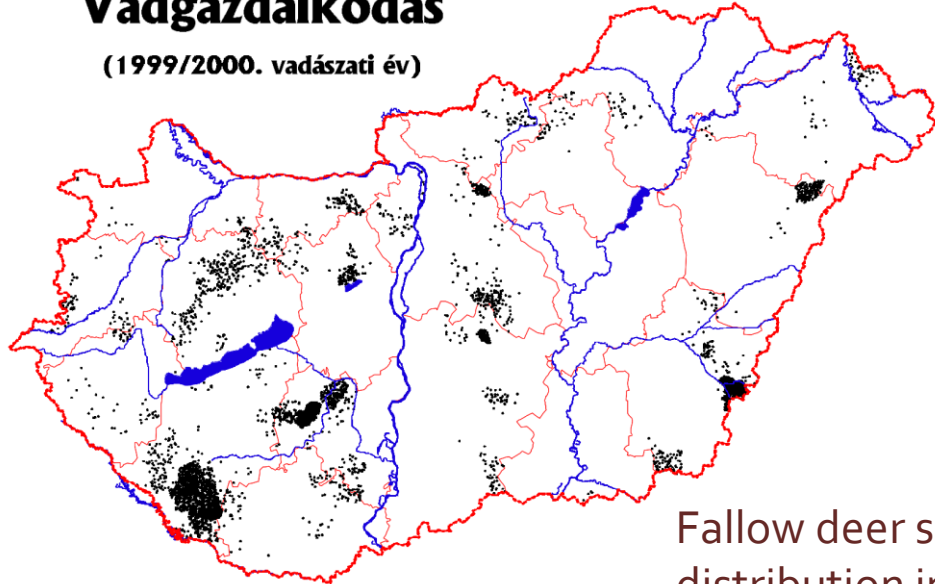


Introduced: e.g. Austria, Belgium, Bulgaria, Croatia, Czech Republic, Hungary, France, Germany, Italy, Switzerland, Poland, Slovakia, Slovenia, Spain, Sweden, Romania, Argentina, Chile and the USA

Fallow deer and mouflon in Hungary - spreading

Vadgazdálkodás

(1999/2000. vadászati év)



Fallow deer shot
distribution in

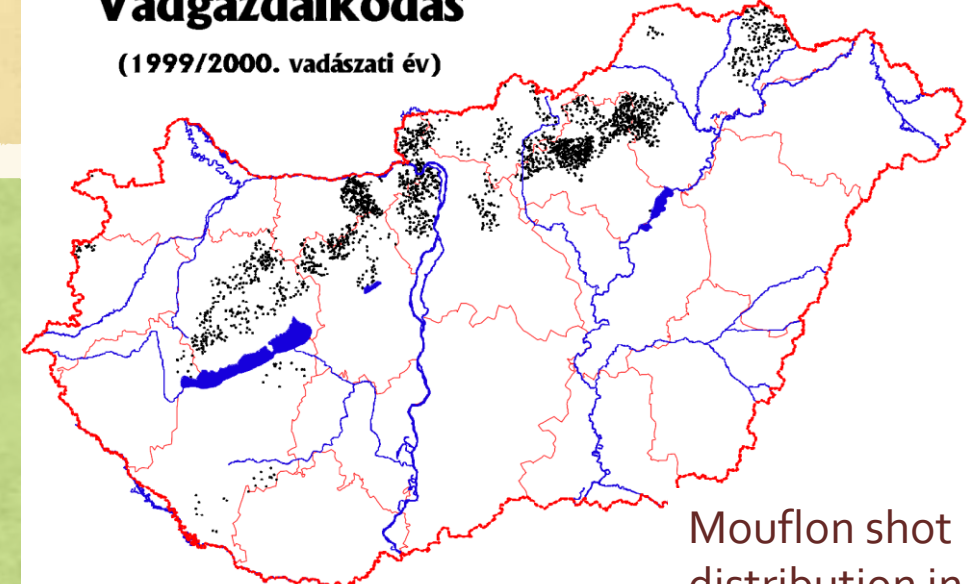
2000

Source: Hungarian Game Management Database

Országos Vadgazdálkodási Adattár
SZIE Vadbiológiai és Vadgazdálkodási Tanszék
Gödöllő, 2000

Vadgazdálkodás

(1999/2000. vadászati év)



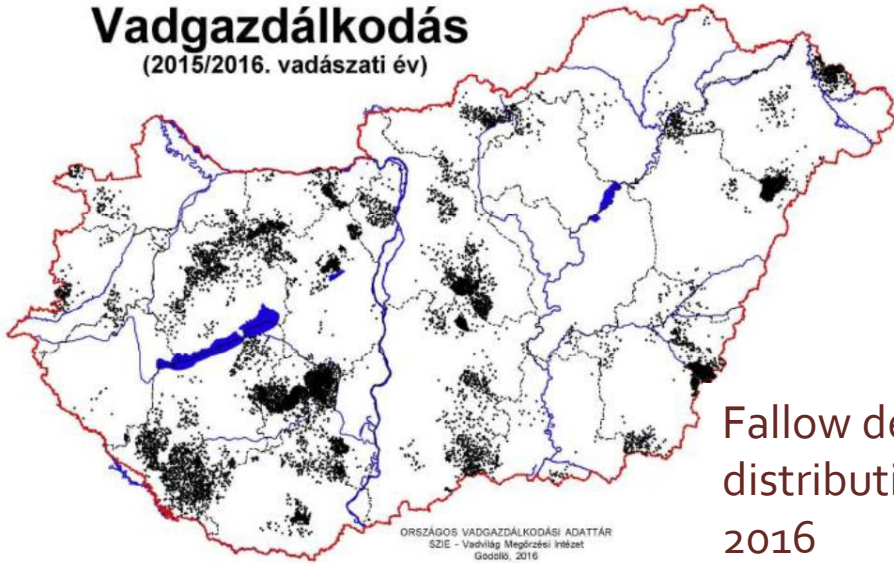
Mouflon shot
distribution in

2000

Országos Vadgazdálkodási Adattár
SZIE Vadbiológiai és Vadgazdálkodási Tanszék
Gödöllő, 2000

Vadgazdálkodás

(2015/2016. vadászati év)

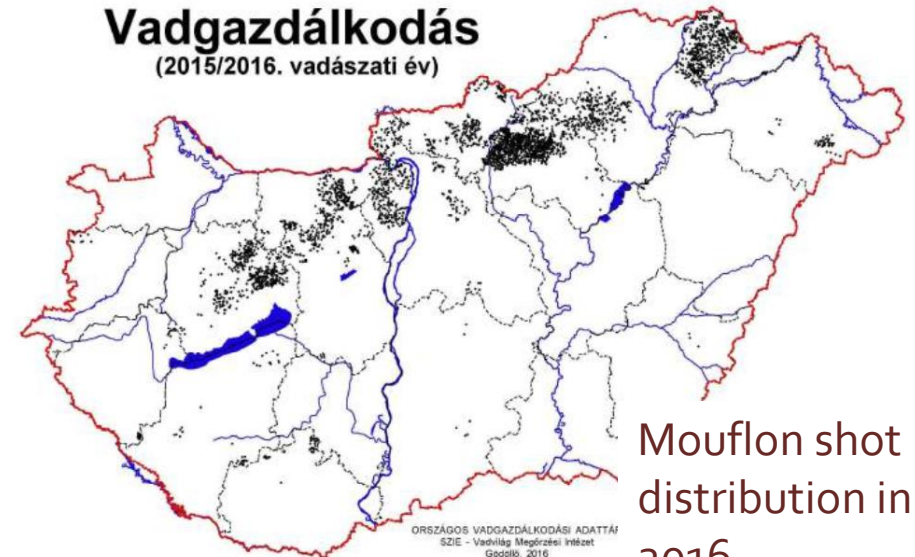


Fallow deer shot
distribution in
2016

ORSZÁGOS VADGAZDÁLKODÁSI ADATTÁR
SZIE - Vadvilág Megőrzési Intézet
Gödöllő, 2016

Vadgazdálkodás

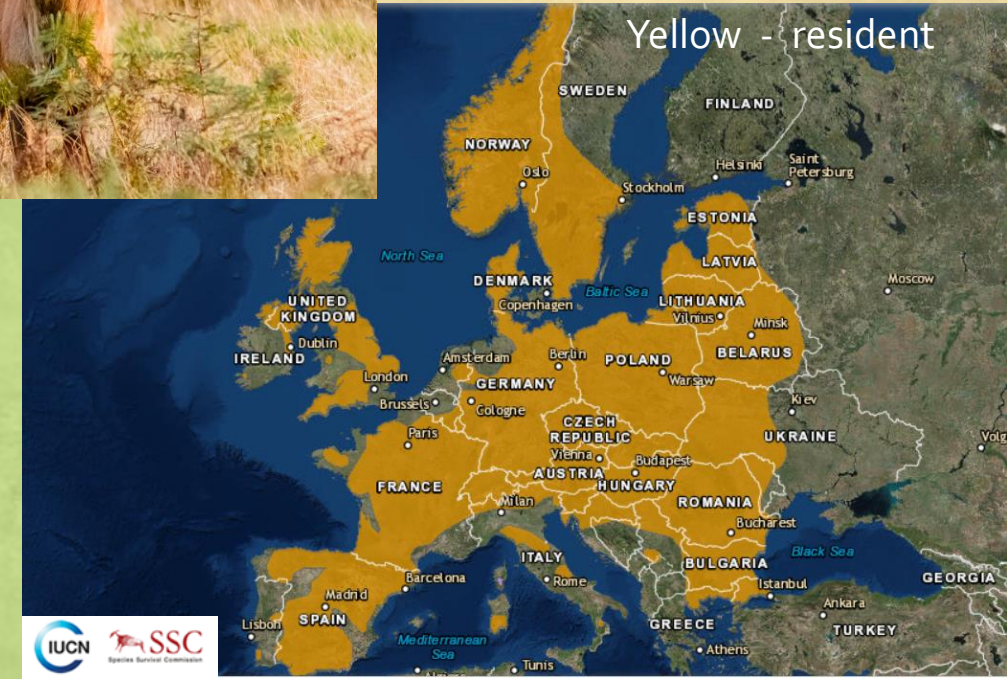
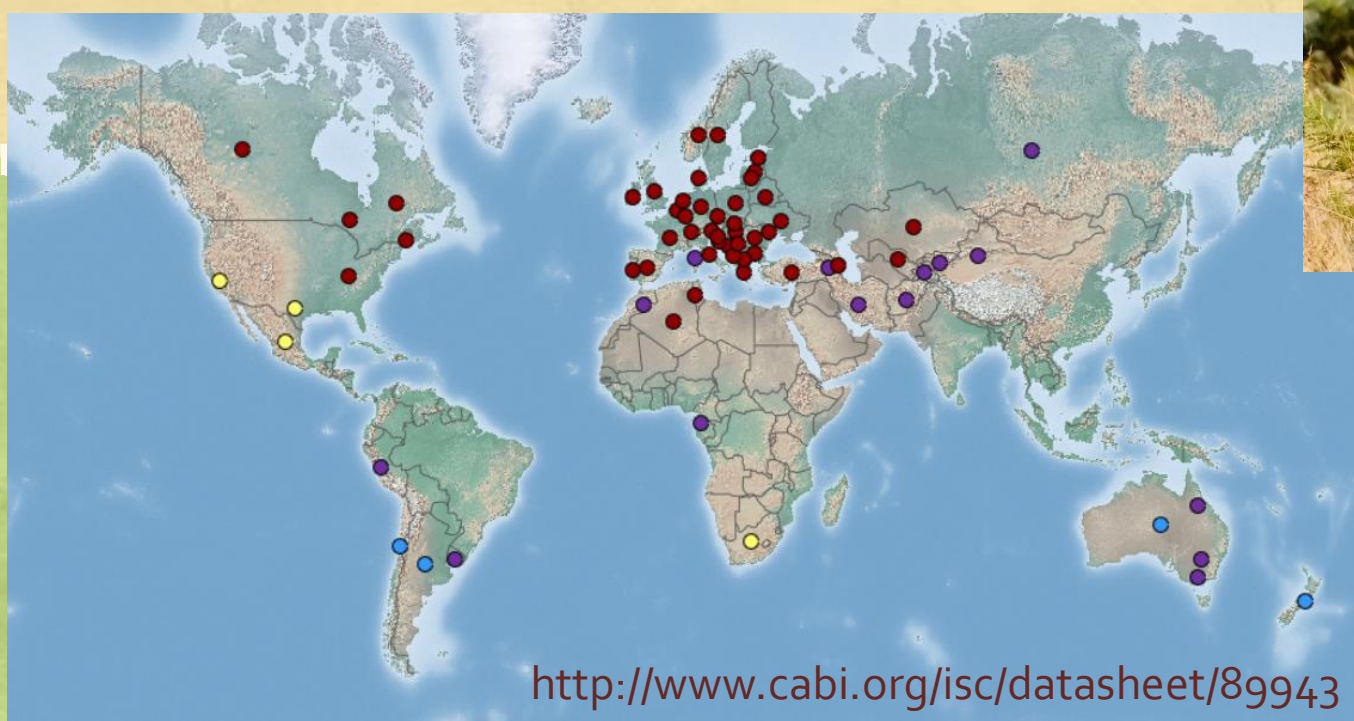
(2015/2016. vadászati év)



Mouflon shot
distribution in
2016

ORSZÁGOS VADGAZDÁLKODÁSI ADATTÁR
SZIE - Vadvilág Megőrzési Intézet
Gödöllő, 2016

Red deer (*Cervus elaphus*)



The red deer has a distribution extending from Europe into North Africa and the Middle East

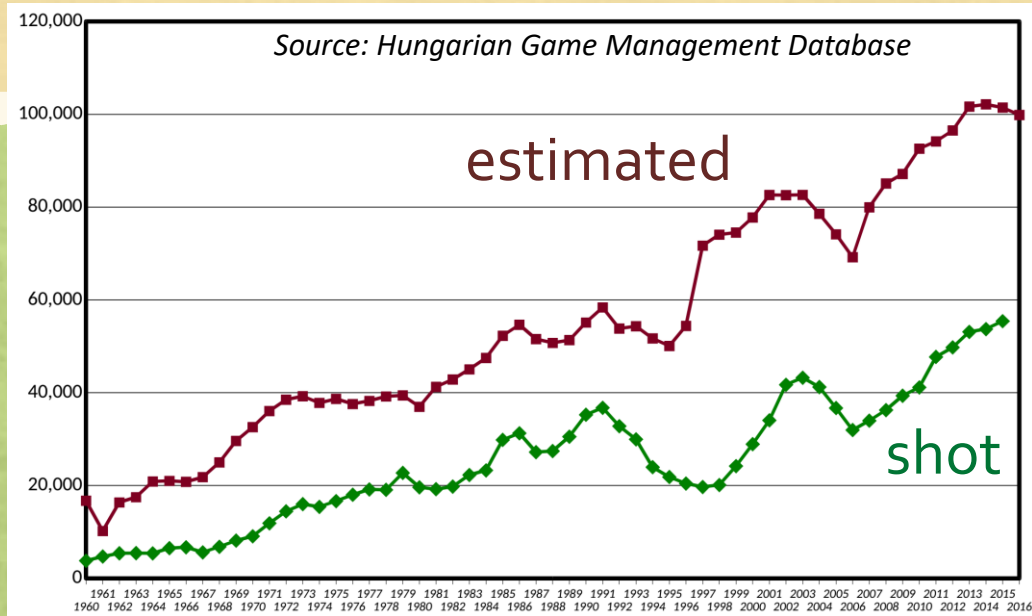
Native: Algeria; Armenia; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; France (France (mainland)); Georgia; Germany; Hungary; Iran, Islamic Republic of; Ireland; Italy; Latvia; Lithuania; Luxembourg; Macedonia, the former Yugoslav Republic of; Moldova; Montenegro; Netherlands; Norway; Poland; Romania; Serbia; Slovakia; Slovenia; Sweden; Switzerland; Tunisia; Turkey; Ukraine

Regionally extinct: Albania; Israel; Jordan; Lebanon; Syrian Arab Republic

Reintroduced: Greece; Portugal, Morocco

Introduced: Argentina; Australia; Chile; New Zealand

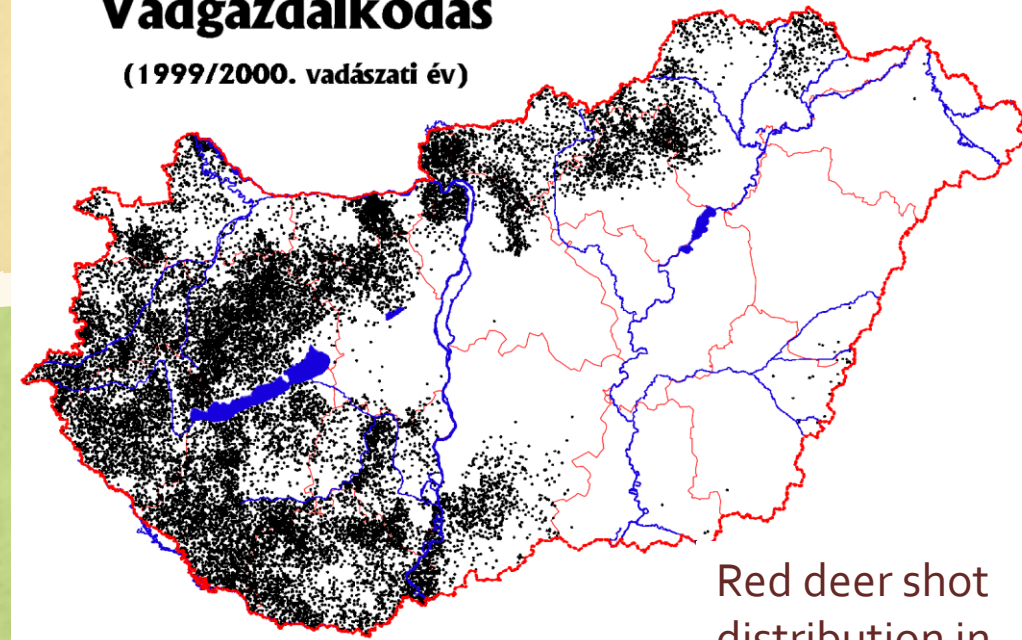
Red deer (*Cervus elaphus*) in Hungary



- Increase of forest cover to 27%
- Forest – agriculture complex habitats

Vadgazdálkodás

(1999/2000. vadászati év)

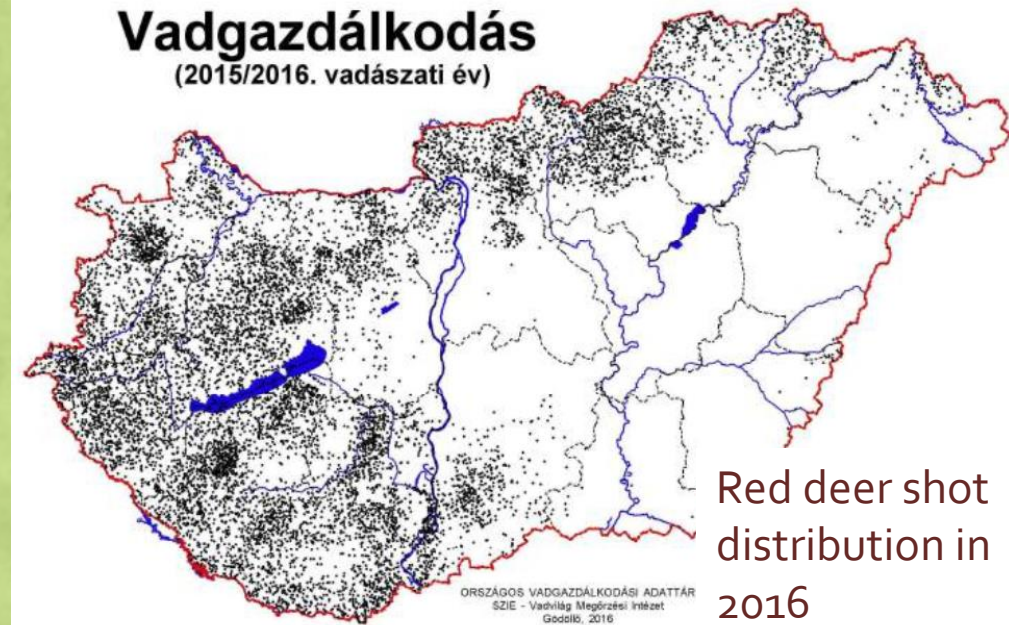


Red deer shot
distribution in
2000

Source: Hungarian Game Management Database

Vadgazdálkodás

(2015/2016. vadászati év)

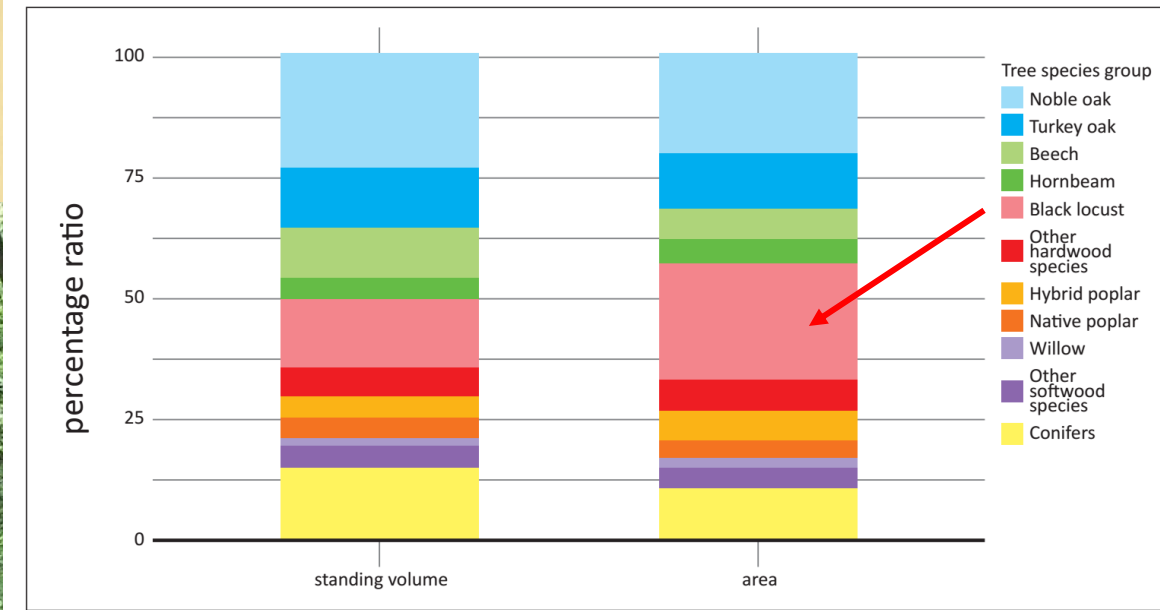


Red deer shot
distribution in
2016

Expansion of black locust – plantation and penetration



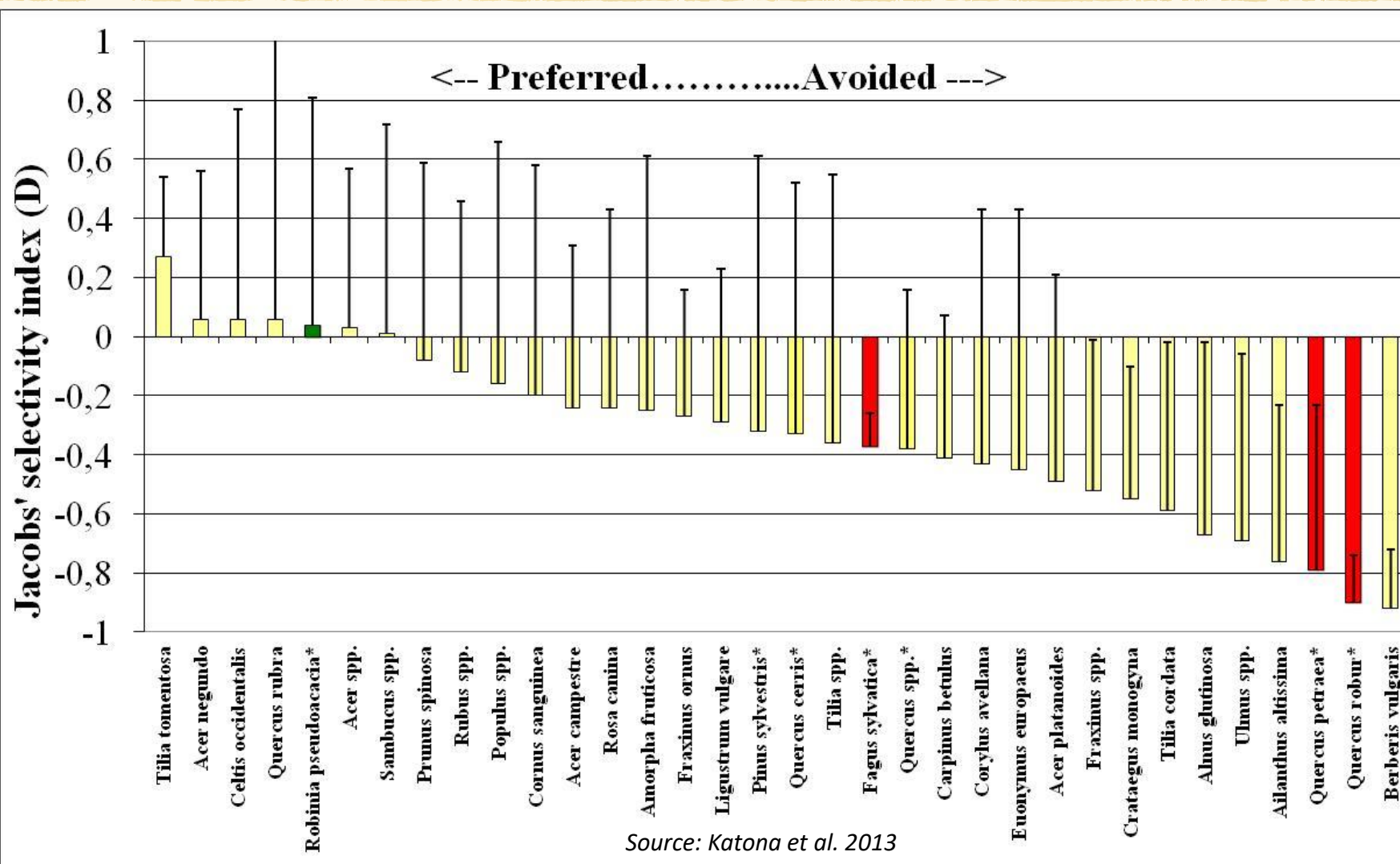
Area and growing stock distribution of tree species groups



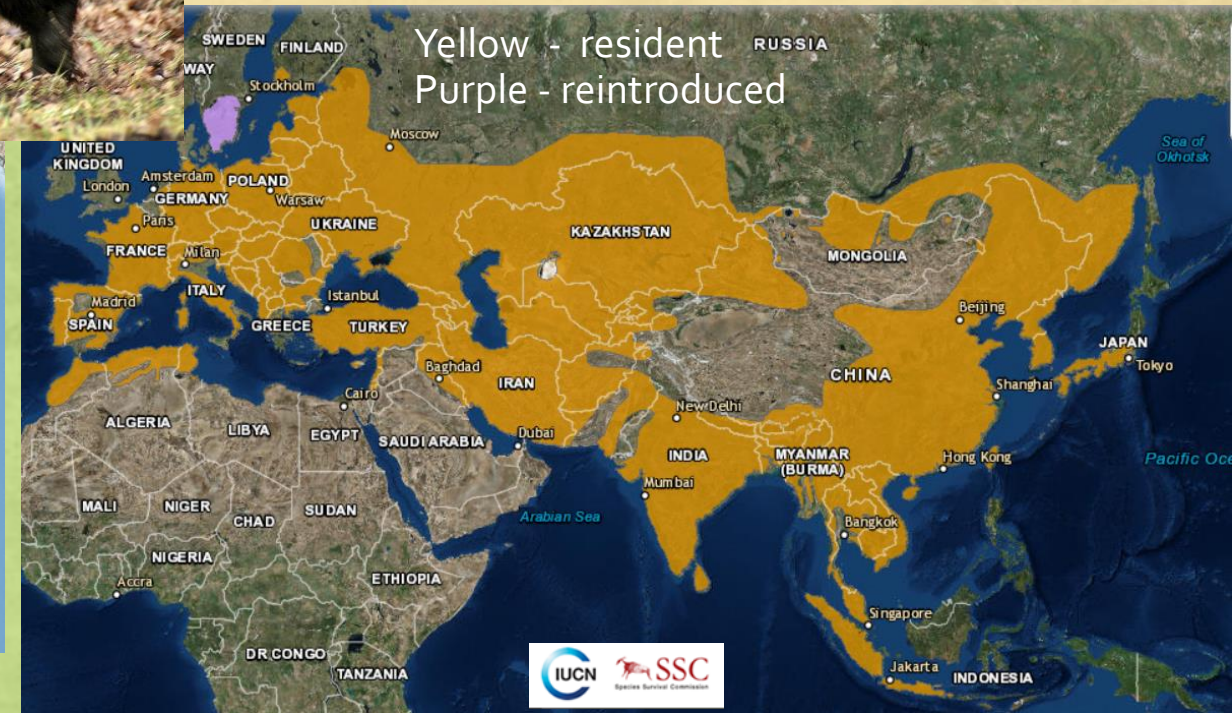
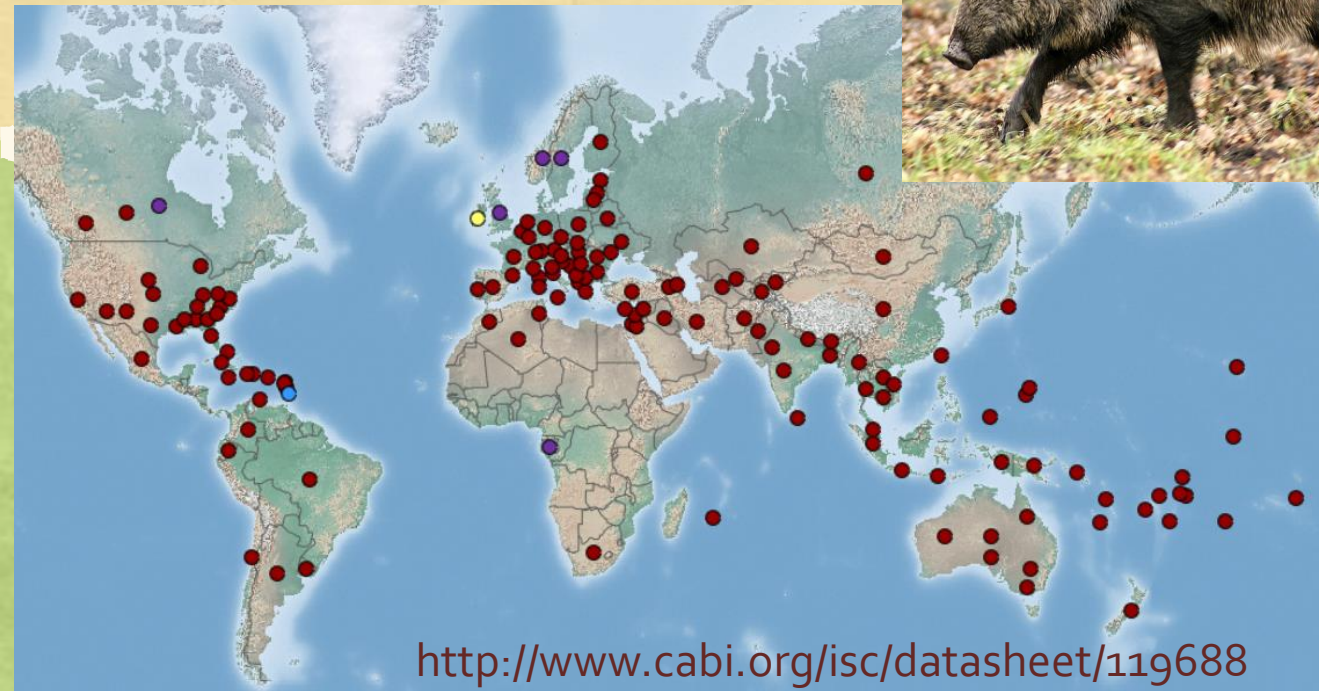
Source: National Food Chain Safety Office, 2016



Food selection of spreading ungulates shapes the vegetation (*Preference to black locust*)



Wild boar (*Sus scrofa*)



Wild boar has one of the widest geographic distributions of all terrestrial mammals. It now occurs in wild or modified feral form on all continents excepting Antarctica, and on many oceanic islands.

Native: to large parts of Europe, Asia and North Africa.

Regionally extinct: British Isles, Scandinavia, parts of North Africa, parts of former Soviet Union, northern Japan

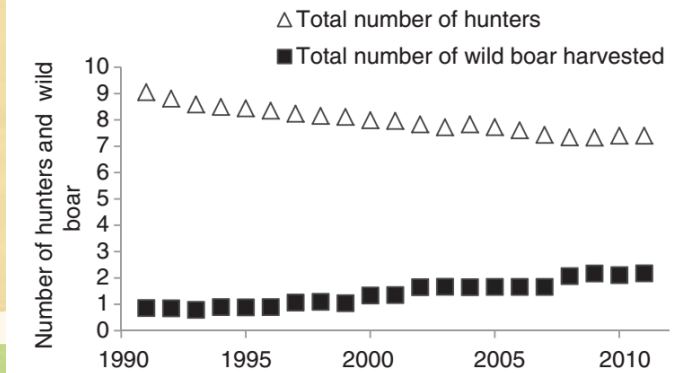
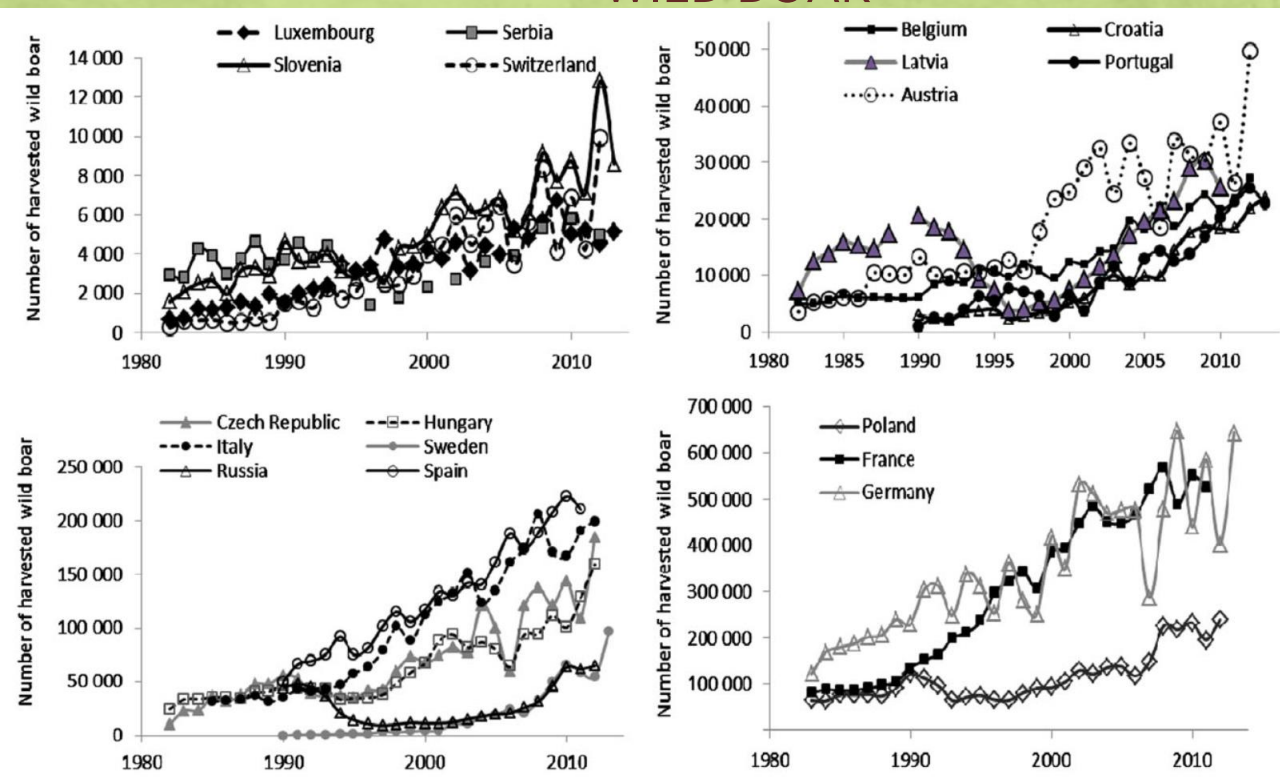
Reintroduced: Sweden, Britain

Introduced: e.g. Sicily, Argentina; Australia; Brazil; Cuba; Dominican Republic; Ecuador (Galápagos); Haiti; Jamaica; New Zealand; Papua New Guinea; South Africa; Sudan; United States (e.g. Arizona, Florida, Georgia, Hawaiian Is.)

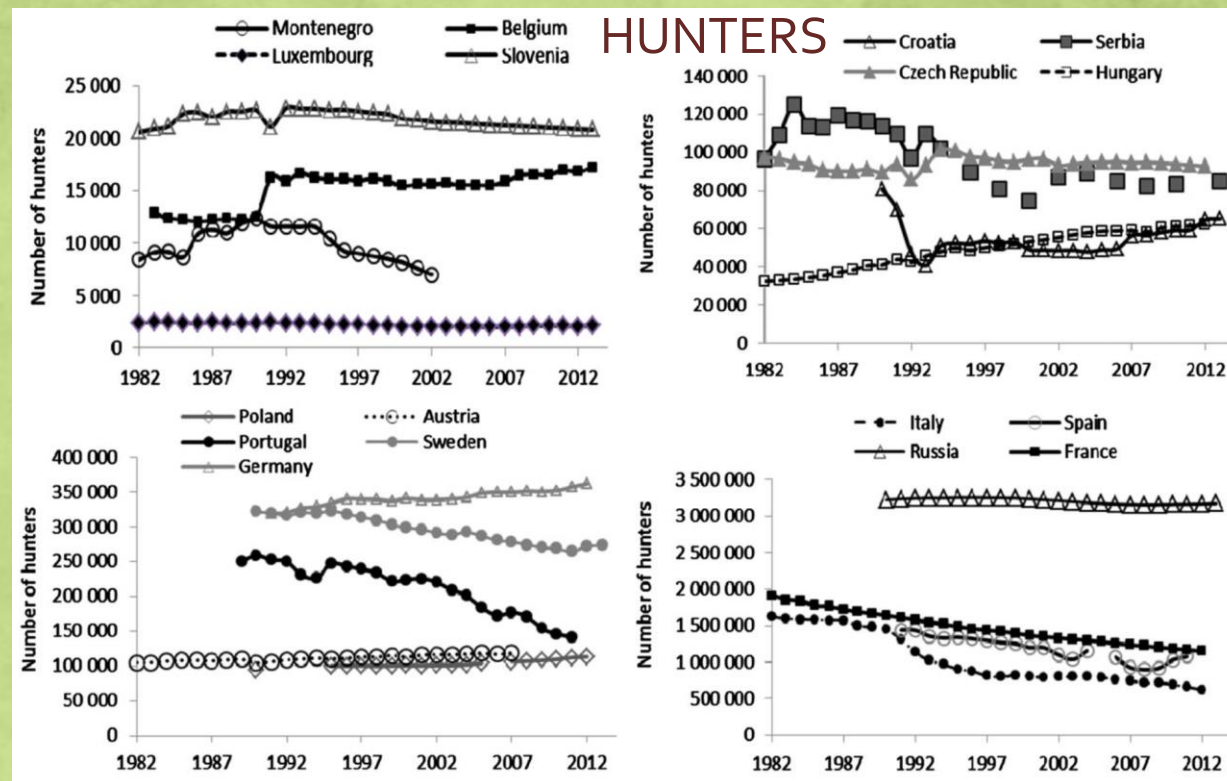
Wild boar populations up, numbers of hunters down

(Massei et al. 2014)

WILD BOAR

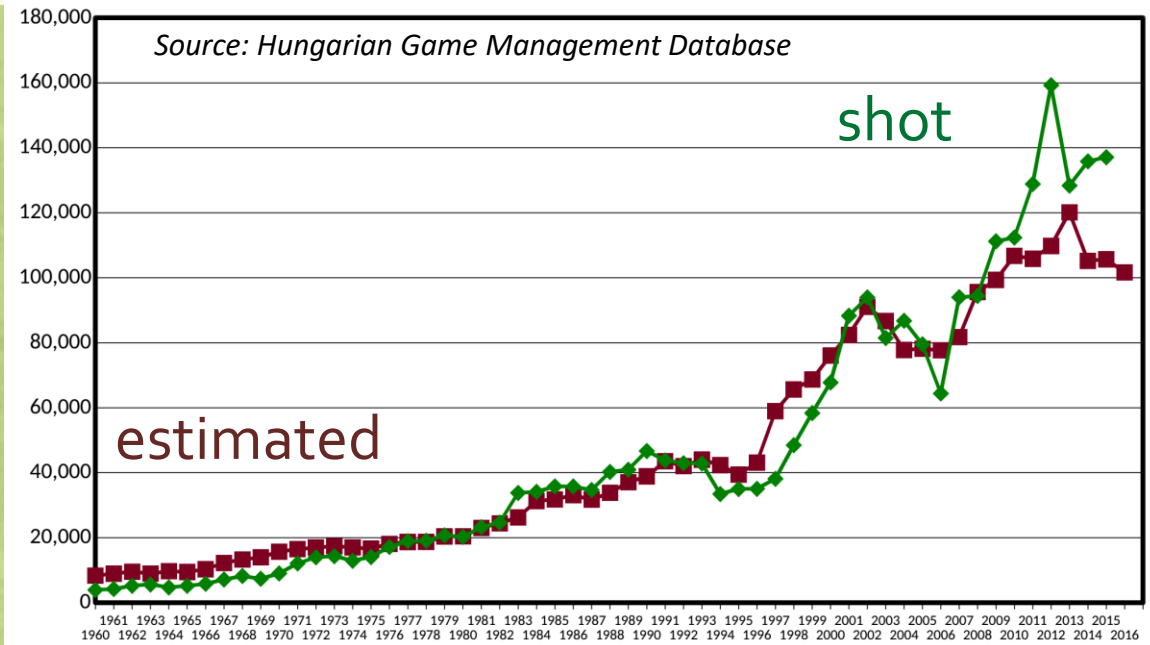


HUNTERS

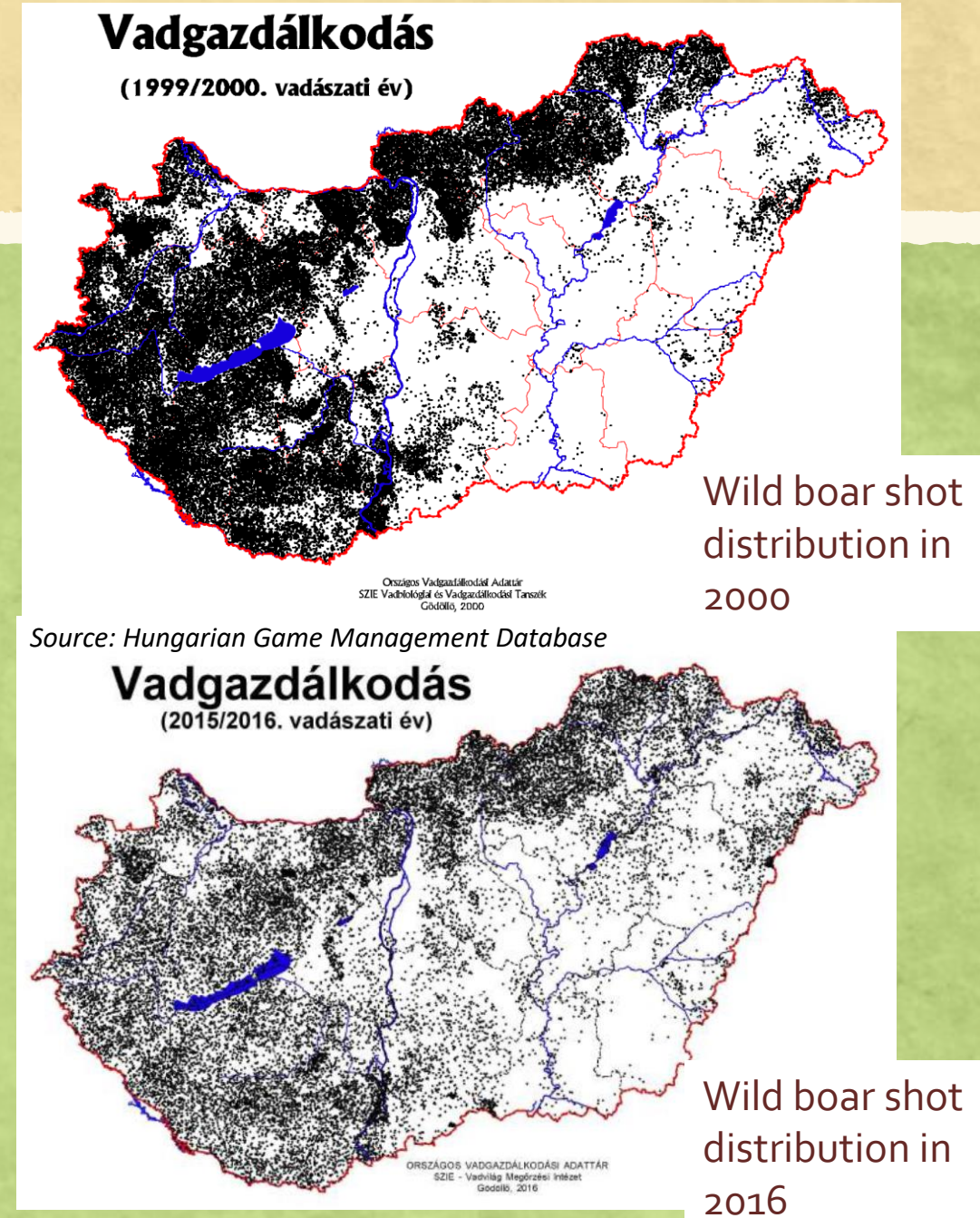


- **Decreasing number of hunters** : Luxembourg, Serbia, France, Slovenia, Portugal, Sweden, Italy and Spain
- **Stable number of hunters**: Montenegro, Croatia, the Czech Republic and Russia
- **Increasing number of hunters**: Belgium, Poland, Austria, Hungary and Germany

Wild boar (*Sus scrofa*) in Hungary



- Problem to small game management and conservation



Monitoring of intensively spreading forest mammals

- Observations of game and forest managers, rangers
- Incidental public observations
- Questionnaire surveys
- e.g. National Game Management Database
- Additional data from faunistic researches (trappings, camera traps, track counts)
- e.g. ungulate impact monitoring
- Direct monitorings are needed (long-term, not one year investigations)

Thank you for your attention!



Photo: Krisztián Katona