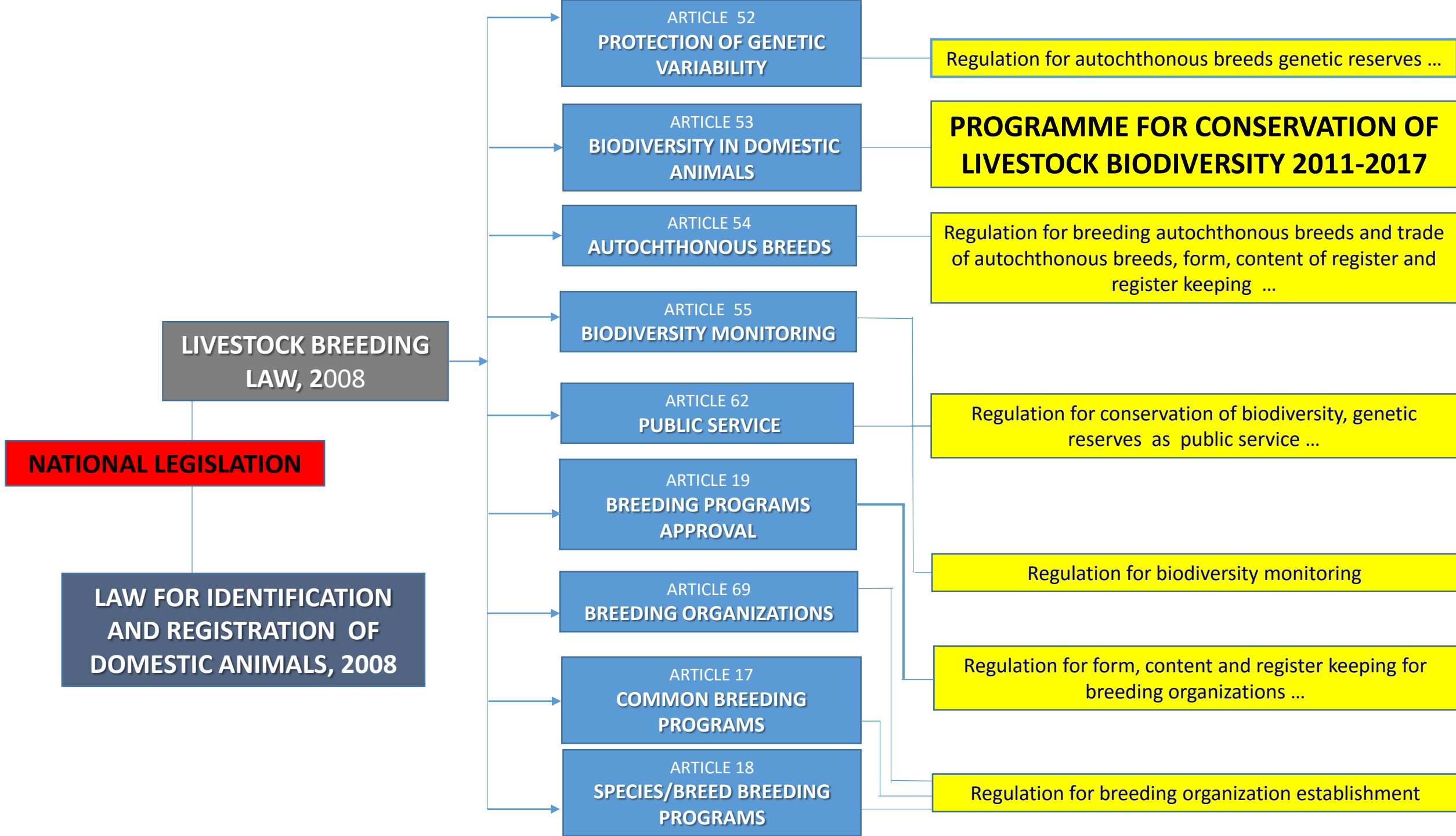
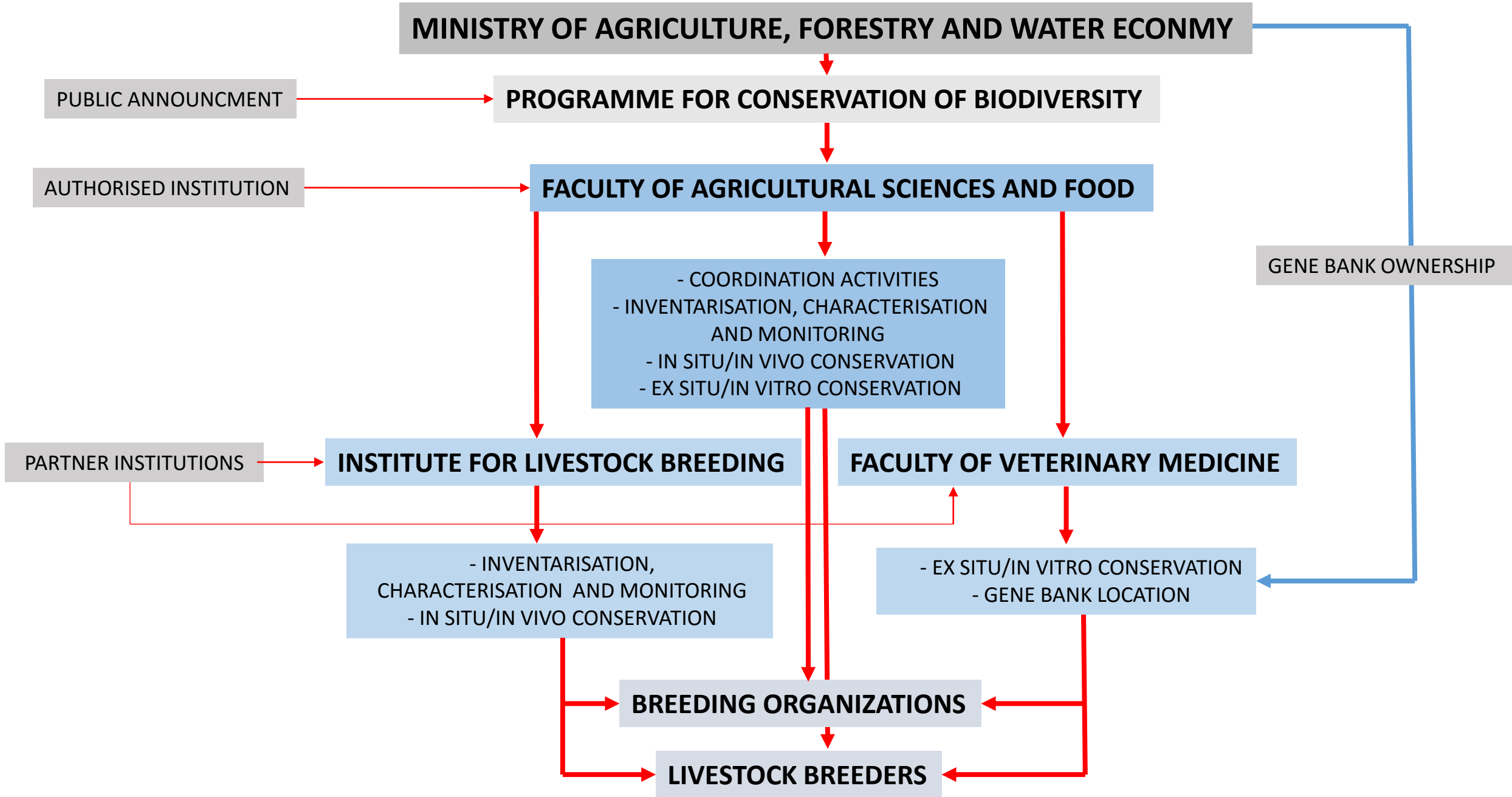


***In situ* and *Ex situ* gene conservation in Republic of Macedonia**

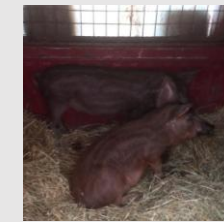
Koco Porcu, PhD

University of Ss. Cyril and Methodius in Skopje
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Republic of Macedonia

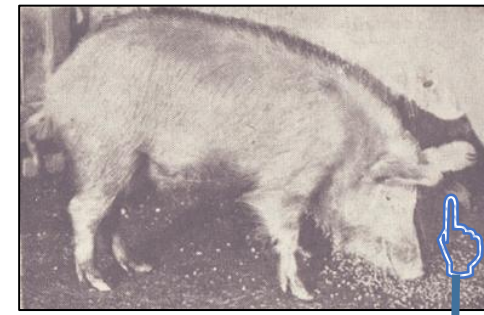




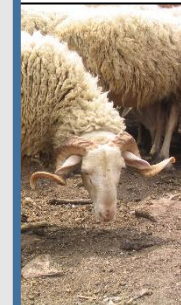
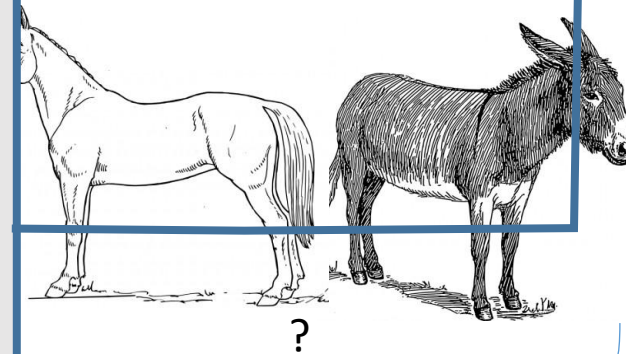
AnGR Republic of Macedonia



✓ **FOUR LOCATIONS (LOCAL POPULATION) → "In-situ" →
IMPROVED BREEDING CONDITIONS = DUROC**



ATTEMPTS TO FIND = 0 **EXTINCT ?**



ATTEMPTS TO FIND = 0 **EXTINCT ?**



< 90



In situ – OVCEPOLIAN SHEEP

- Breeding organization, 2011
- 7 flocks = < 3500 heads (♀3047; ♂453)
- Breeding programme: 2011-2016 (to advanced)
- Subsidies

Year	Per head	OP Sheep	Total
2014	15€	10€	25€
2015	15€	10€	25€

- Production traits-milk recording AT₄ method
- Genetic analysis: microsatellites, PrP genotyping



Ex situ/In vitro – OVCHEPOLIAN SHEEP

- 2014/2015= 9 donors/6676 straws
- Goal = ≥ 50 donors in next five years



037



847



064



055



977



019



046



369



934

Year	Breed	Ram number	Straws
2014	OPSh	<u>037</u>	41
	OPSh	<u>046</u>	1091
	OPSh	<u>055</u>	758
	OPSh	<u>064</u>	625
	OPSh	<u>369</u>	255
	TOTAL	5	2770
CONSERVATION OF SEMEN			
2015	OPSh	847	502
	OPSh	934	186
	OPSh	977	538
	OPSh	<u>037</u>	617
	OPSh	<u>046</u>	279
	OPSh	<u>055</u>	660
	OPSh	<u>064</u>	395
	OPSh	<u>369</u>	447
	OPSh	019	282
	TOTAL	9	3906

Ex situ/In vitro – OVCHEPOLIAN SHEEP

CONSERVATION OF OOCYTES					
Year	Breed	Individual number	N of oocytes	Frozen oocytes	Rejected oocytes
2014	OPSh	116309592	4	3	1
	OPSh	112753564	6	5	1
	OPSh	136339041	7	3	4
	OPSh	136338778	8	8	0
	Total	4	25	19	6

- Goal = in next five years, 50 donors,



Ex situ/In vitro – OVCHÉPOLIAN SHEEP

CONSERVATION OF EMBRYOS					
Year	Breed	Individual number	Corpus luteum	N of embryos	Unfertilized Oocytes
2014	OPSh	116309592	3	3	0
	OPSh	112753564	4	3	1
	OPSh	136339041	2	1	0
	OPSh	136338778	2	2	0
	TOTAL	4	13	9	1

- SUCCESS = 0
- Goal = in next 7 years = ≥ 7 donors, ≥ 5 embryos



Ex situ-KARAKACHANIAN SHEEP

Ex situ/In vivo

- State owned flocks:
 - I flock = 40 animals =1999-2004
 - II flock = 35 animals = 1999-2004
- 2005 merged flocks = 40 animals
- Ex situ/In vivo =INBREEDING
- Research grant = 2015/2016= new flock/s
- No breeding organization
- 4 flocks = < 100 heads



Ex situ/In vitro

CONSERVATION OF SEMEN			
Year	Breed	Ram number	Straws
2015	KARSh	9688	32
	KARSh	3508	23
	KARSh	9371	19
	KARSh	0081	42
	KARSh	0090	41
	KARSh	5588	16
	KARSh	5551	31
	TOTAL	7	204



In situ - DOMESTIC BALKAN GOAT

- Breeding organization - 2012
- Breeding programme (2012-2017)
- 10 flocks = 2500 heads
 - ♀ = 2149 ♂ = 351
- Production traits-milk recording AT₄ method
- Subsidies

Year	Per head	DBGoat	Total
2015	15€	10€	25€



Ex situ/In vitro- DOMESTIC BALKAN GOAT

CONSERVATION OF SEMEN			
Year	Breed	Goat number	Straws
2014 Farm number 238100282	DBGo	122661688	9
	DBGo	<u>113380462</u>	11
	DBGo	<u>122661527</u>	6
	DBGo	120759855	6
	DBGo	114125233	13
	DBGo	122661703	7
	TOTAL	6	52

- 2014/2015 = 19 donor = 569 straws
- Goal = ≥ 50 donors in next five years



CONSERVATION OF SEMEN				
Year	Breed	Goat number	Straws	Location
2015	DBGo	<u>113380462</u>	42	Farm number 238100282
	DBGo	120759721	31	
	DBGo	120779798	26	
	DBGo	122661314	36	
	DBGo	<u>122661527</u>	23	
	DBGo	126164800	27	Farm number 235600587
	DBGo	131184422	28	
	DBGo	120628388	33	
	DBGo	120628397	36	
	DBGo	121352950	43	
	DBGo	127603324	47	Farm number 300013980
	DBGo	124513312	38	
	DBGo	120756946	35	
	DBGo	124469330	38	
	DBGo	124469428	24	
	TOTAL	15	517	

In situ/Ex situ conservation - BUSHA CATTLE

In situ

- Breeding organization – 2011
- Members = 42 breeders

♀	♂	Total
654	66	720

- Breeding program (2011-2016)
- Subsidies

Year	Per head	Busha	Total
2013	50€	25€	75€
2015	50€	25€	75€

Ex situ - In vitro

CONSERVATION OF SEMEN				
Year	Breed	Bull number	Straws	Location
2014	BUSCa	7895	120	I
	BUSCa	7896	130	
	BUSCa	19230177	103	II
	BUSCa	19230269	105	
	TOTAL	4	458	
2015	BUSCa	4267	122	III
	BUSCa	7832	138	
	BUSCa	19230177	149	II
	BUSCa	19230269	136	
	TOTAL	4	545	

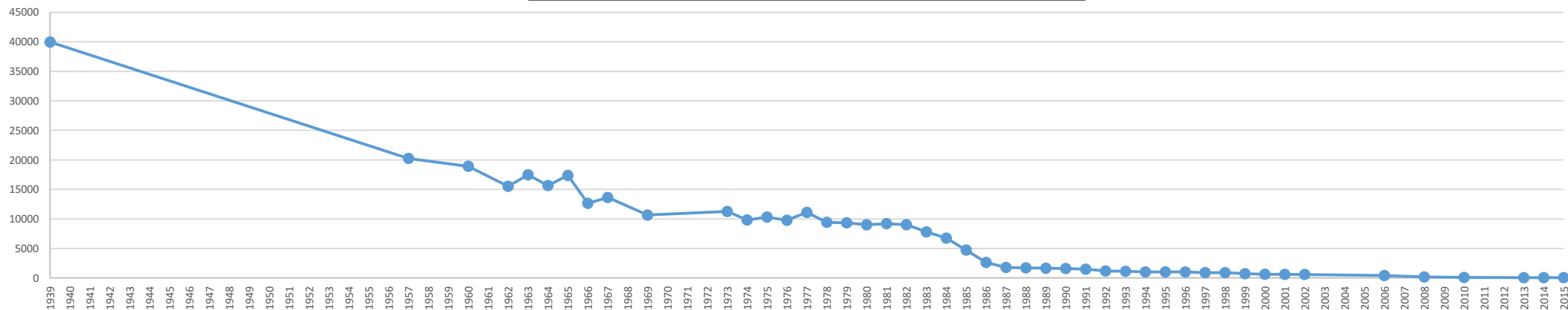


Buffalo – Conservation activities

- No breeding organization
- No breeding programme
- No In situ/Ex situ activities
- Fresh blood = 25 samples

National Biodiversity Programme - Inventory and Characterization						
LOCATION	n ♀	n ♂	2014	n ♀	n ♂	2015
1	3	25	28	3	23	26
2	1	15	16	1	15	16
3	2	5	7	2	5	7
4	0	2	2	0	4	4
5	0	4	4	0	4	4
6	0	3	3	0	0	0
7	0	4	4	0	0	0
Total	6	58	64	6	51	57

Trend in Buffalo breeding (1939-2015)



CONCLUSIONS AND FUTHER ACTIVIES

- CAPACITIES FOR CONSERVATION ACTIVITIES
 - LEVEL OF PERFORMED ACTIVITIES
 - BREEDERS ARE INTRESTED
 - FOUNDS FOR 2016
-
- REVISION/REVIEW OF RESULTS AND ACTIVITIES
 - DATA KEEPING SOFTWARE
 - NEW PROGRAME FOR CONSERVATON OF ANGr 2017-2014
 - DEVELOPMENT OF BREED SPECIFIC NEEDS/BREED ORIENTED



Thank you for your attention

