

Water-bird registration in the common water-body of Pasvik Zapovednik (Russia) and Pasvik Nature Reserve (Norway)

Tiia Kalske



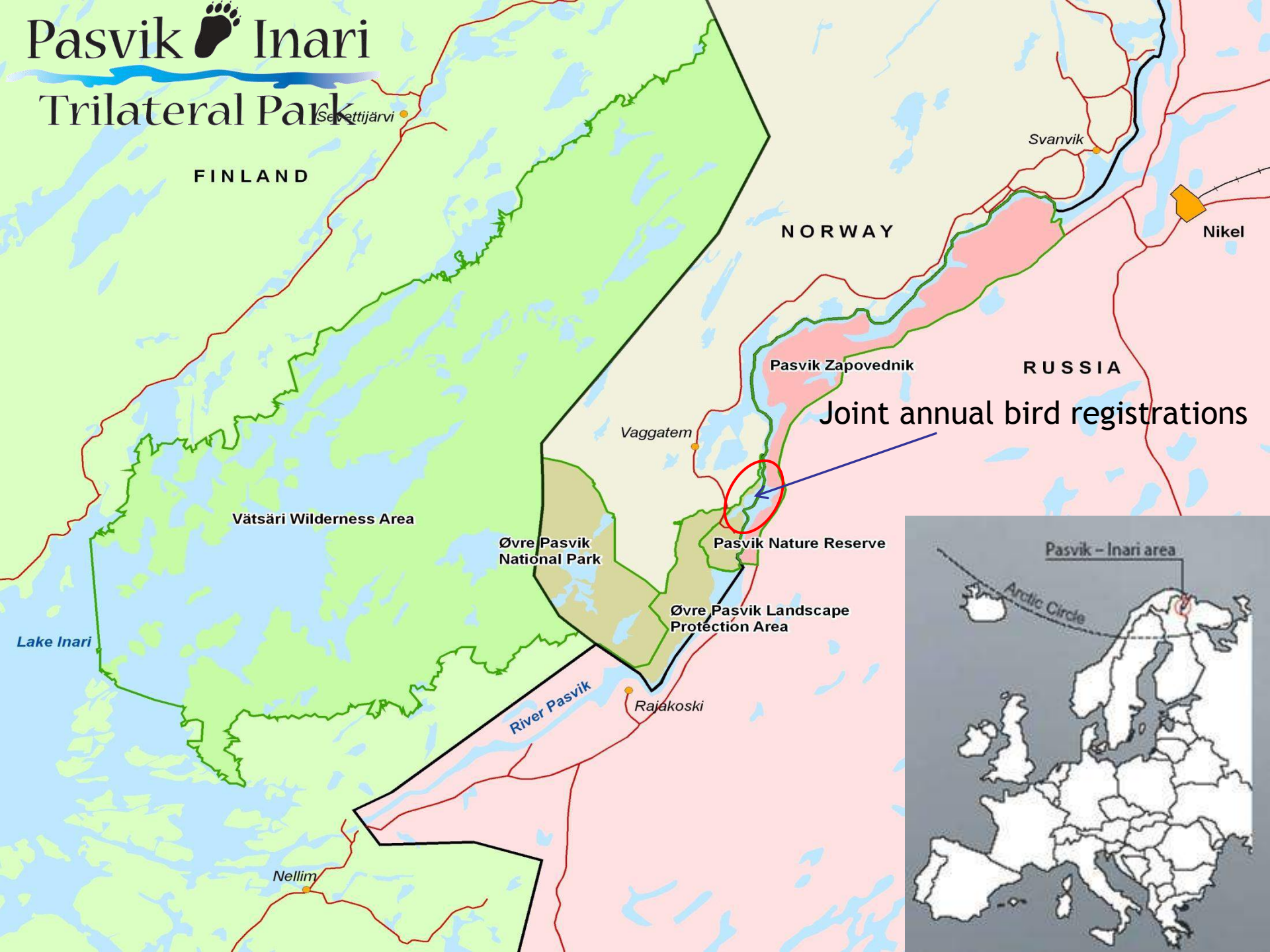
Office of the Finnmark County Governor, Norway

Workshop 02 - Europarc 2013 Conference, October
9-13 Debrecen Hungary

Paul Eric Aspholm, Tor Arne Bjørn - Bioforsk Soil and Environment, Norway
Natalia Polikarpova, Olga Makarova - Pasvik zapovednik, Russia

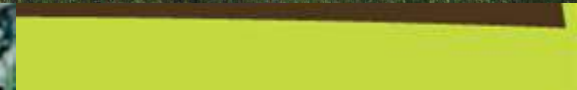
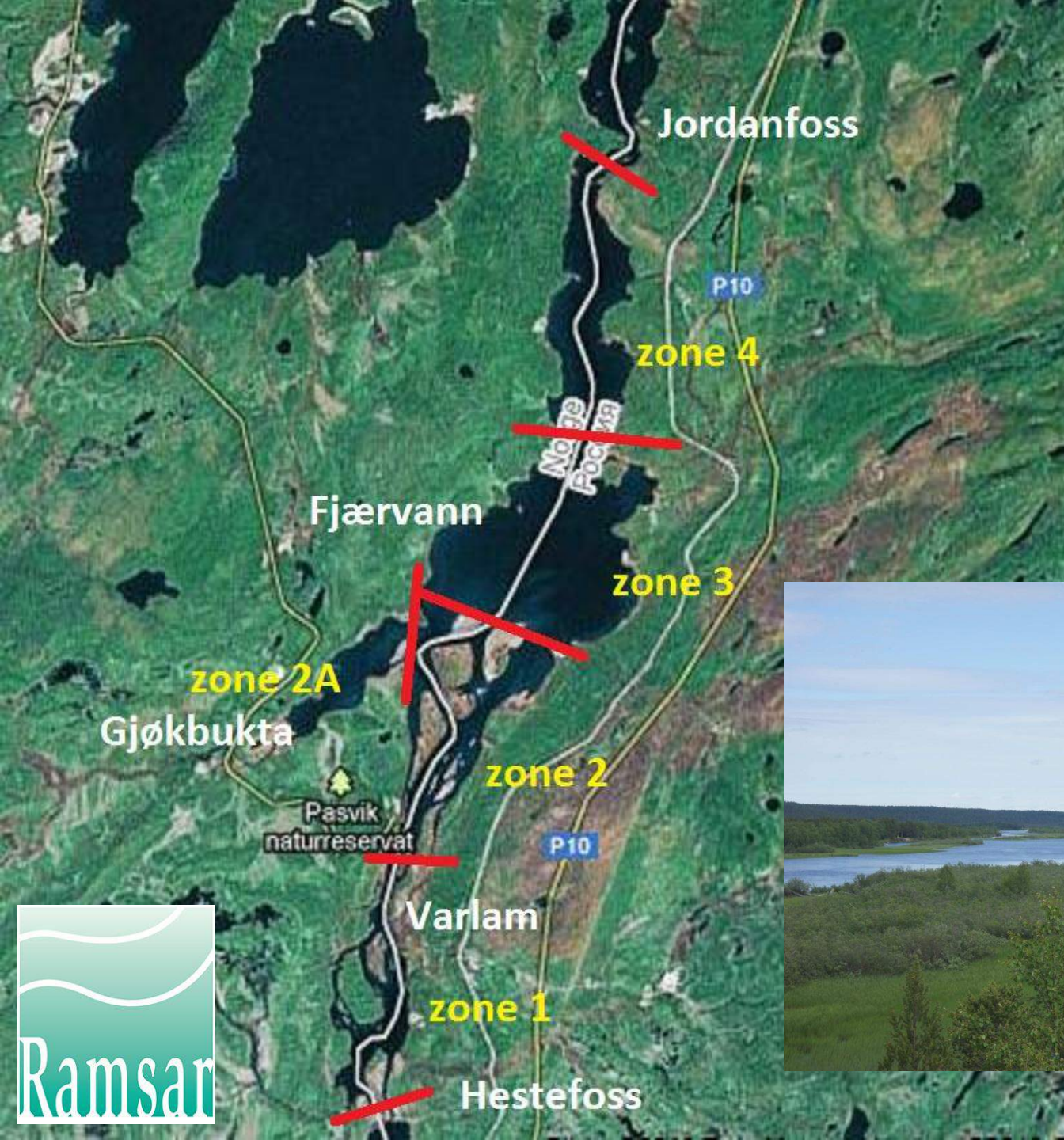
Pasvik Inari

Trilateral Park





- Bothnian bay _____ 250 m _____ Barents sea





Photos: Bioforsk Svanhovd



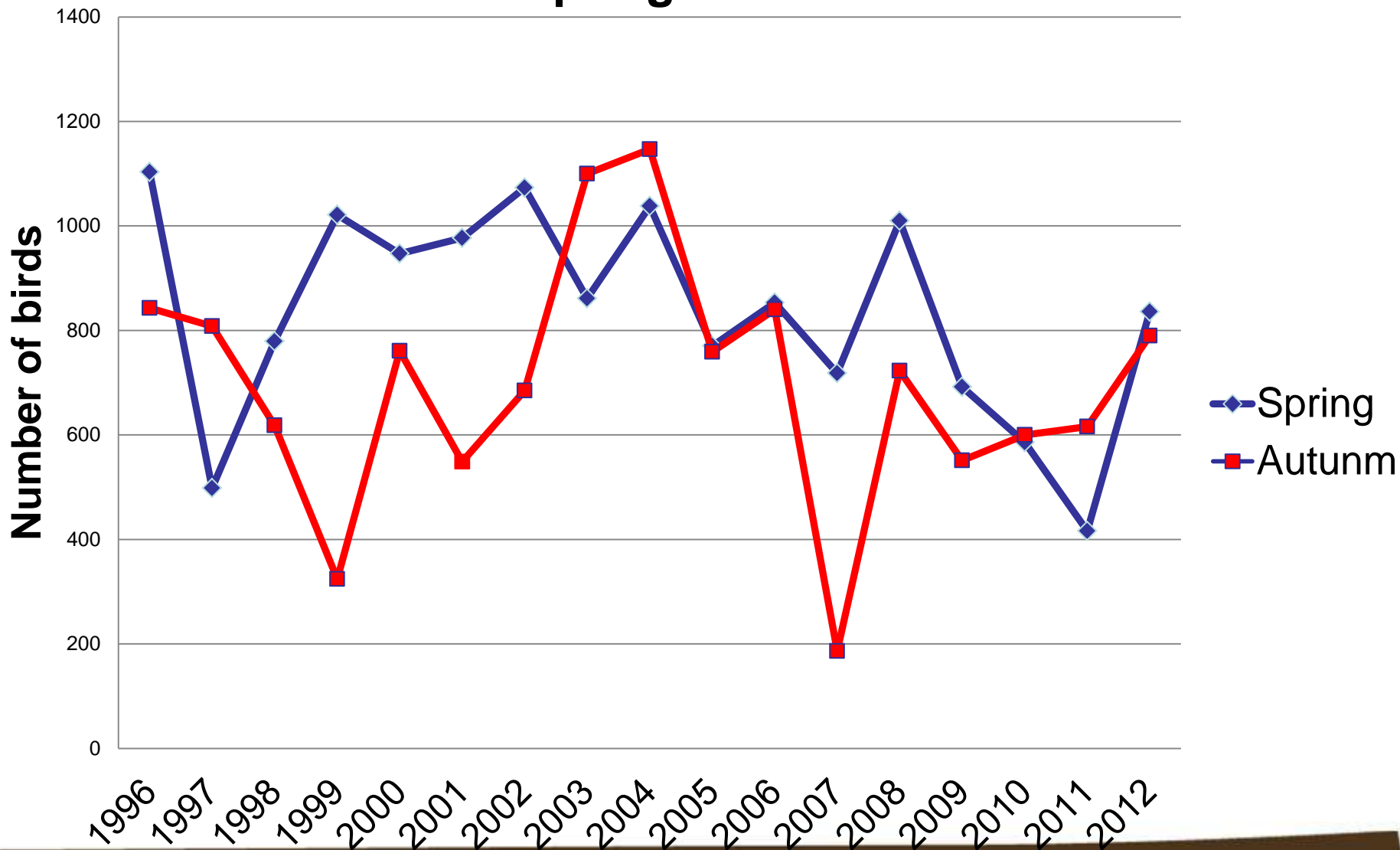
Photo: Bioforsk Svanhovd

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Andarna	24	8	19	23	1	50	43	93	70	48	81	78	103	81	91	110	87	1010
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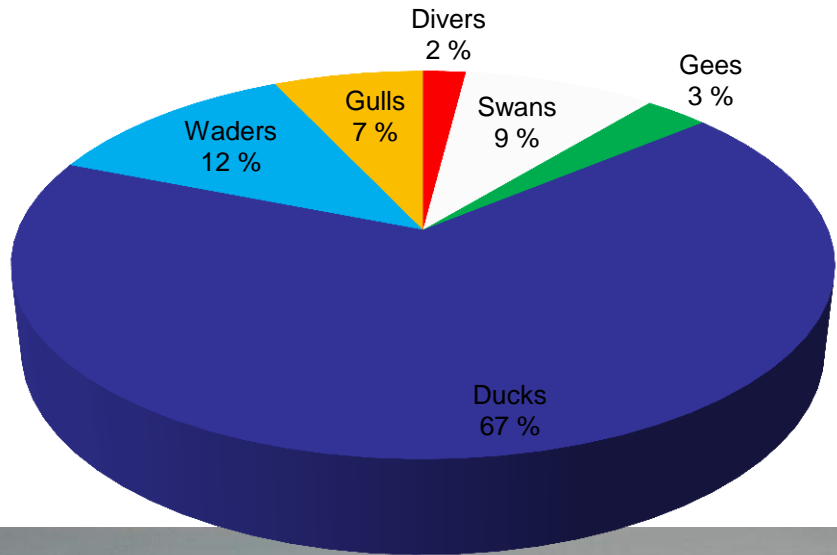
Branta bernicla –
 Чёрная казárка
 Brant Goose



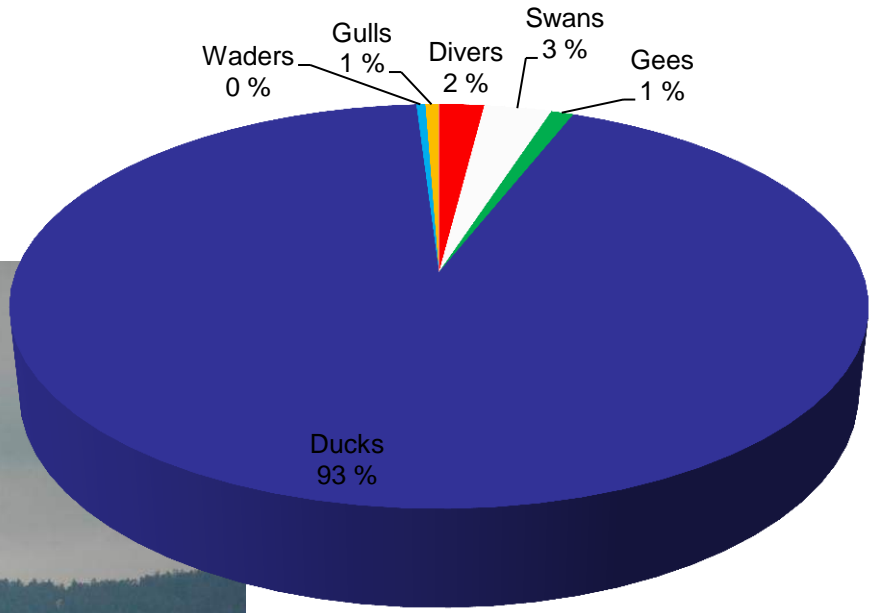
The variation of number of birds during the day-count in spring and in autumn



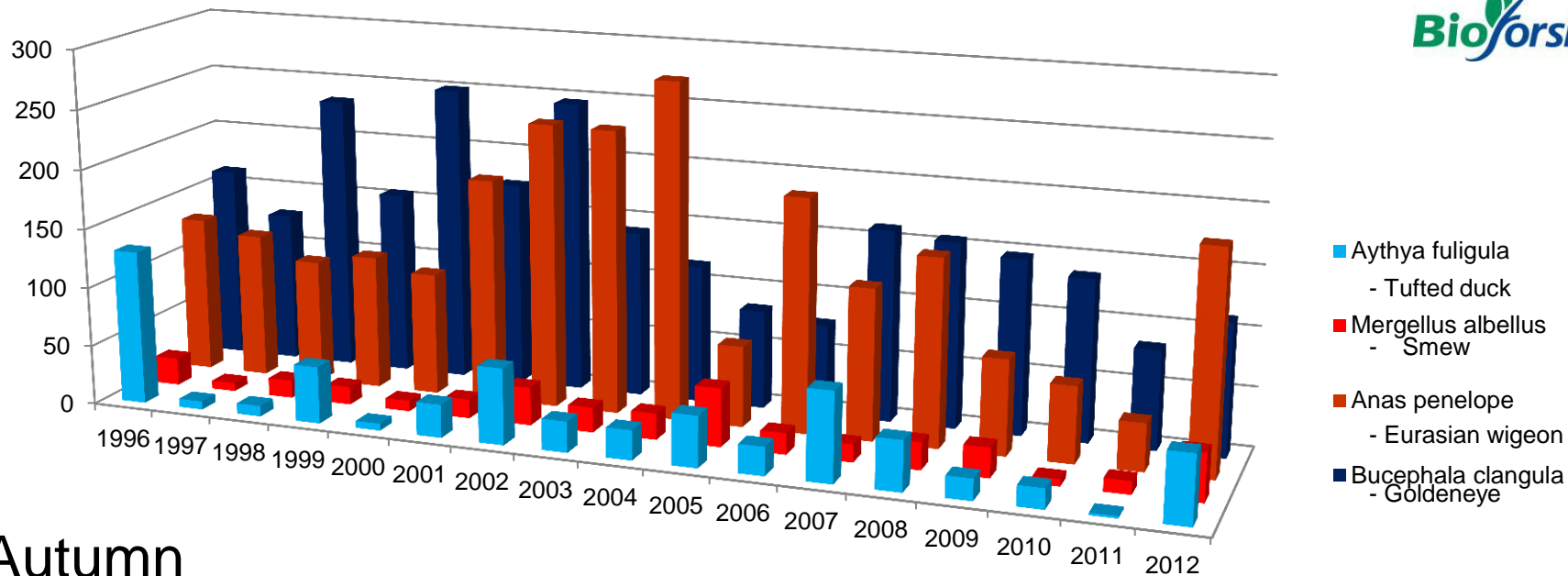
The average percentage of birds in spring



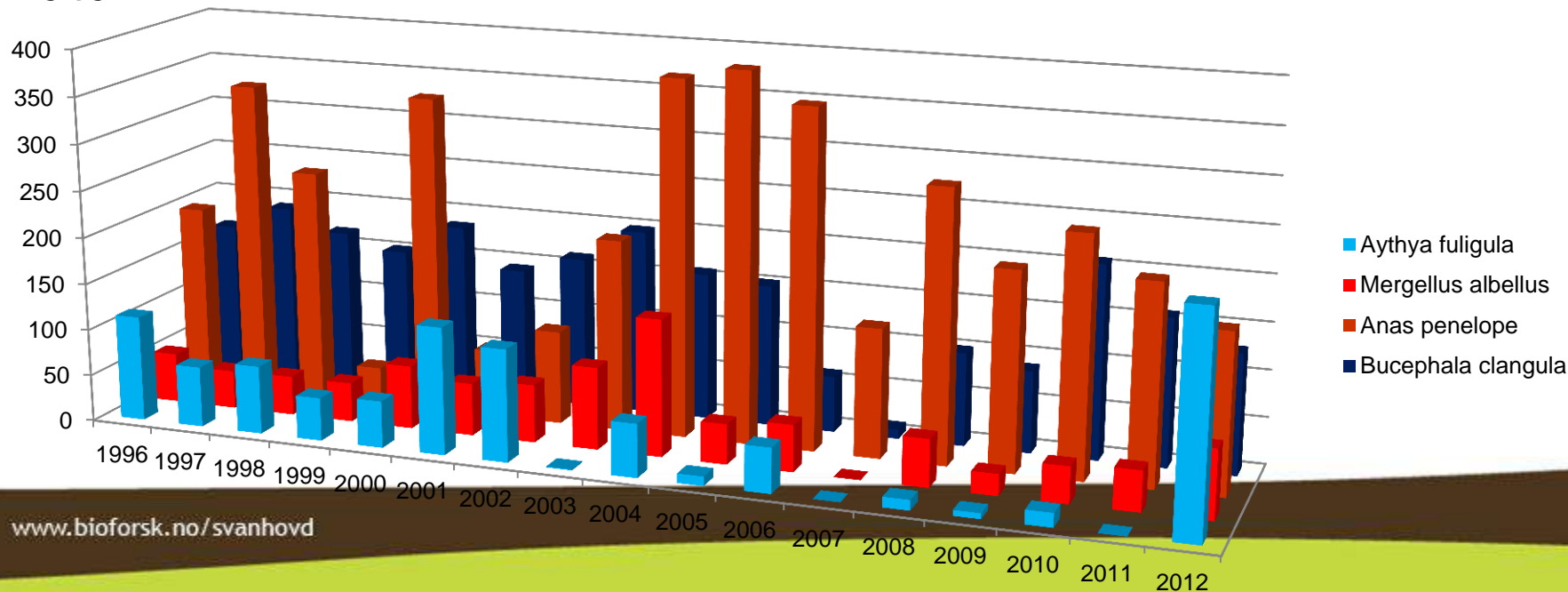
The average percentage of birds in autumn



Spring



Autumn





Sterna paradisaea - Arctic tern

Photo: Bioforsk Svanhovd

Biodiversity



- Shannon-Wiener index

$$H = - \sum p_i \log_2 p_i$$

S-W H= 0,56

(unpredictability - the difficulty to predict next species) high H -> high diversity

- Simpsons "reciprocal" index

$$D = 1 / \sum (p_i)^2$$

Simp reciprocal

D= 0,91

(probability that two choosen individuals will be of different species)

However; huge variations in the indexes from year to year.....



Melanitta nigra – Common scoter

Photo: Bioforsk Svanhovd

The brown bear population of Pasvik-Inari-Pechenga – Management, monitoring and research

Tiia Kalske



Office of the Finnmark County Governor, Norway

Workshop 02 - Europarc 2013 Conference, October 9-13 Debrecen Hungary

Julia Schregel, Alexander Kopatz, Hans-Geir Eiken – Bioforsk Soil and Environment, Norway
Natalia Polikarpova, Olga Makarova – Pasvik zapovednik, Russia
Tuomo Ollila – Metsähallitus, Finland

Pasvik  Inari

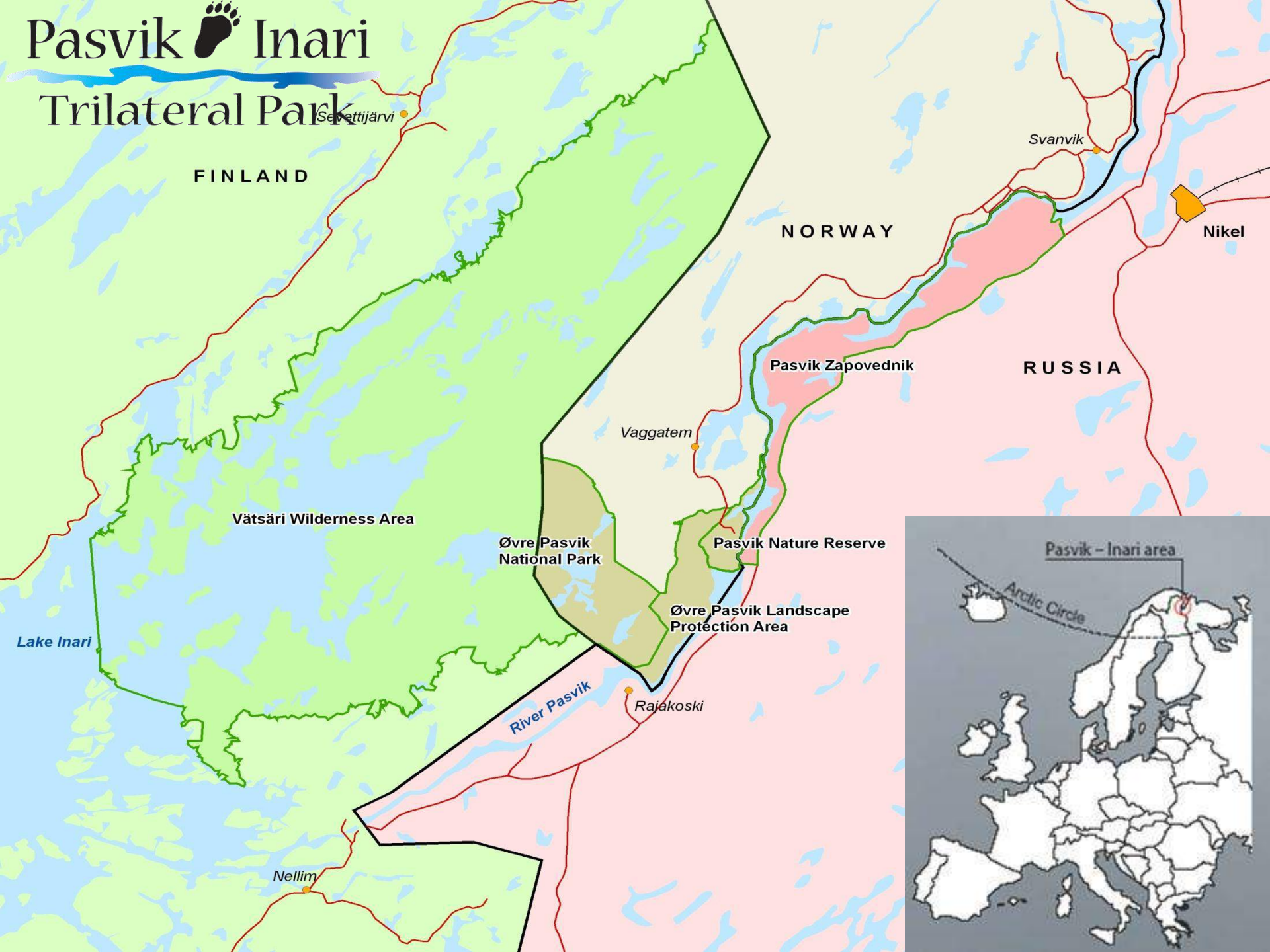
Trilateral Park



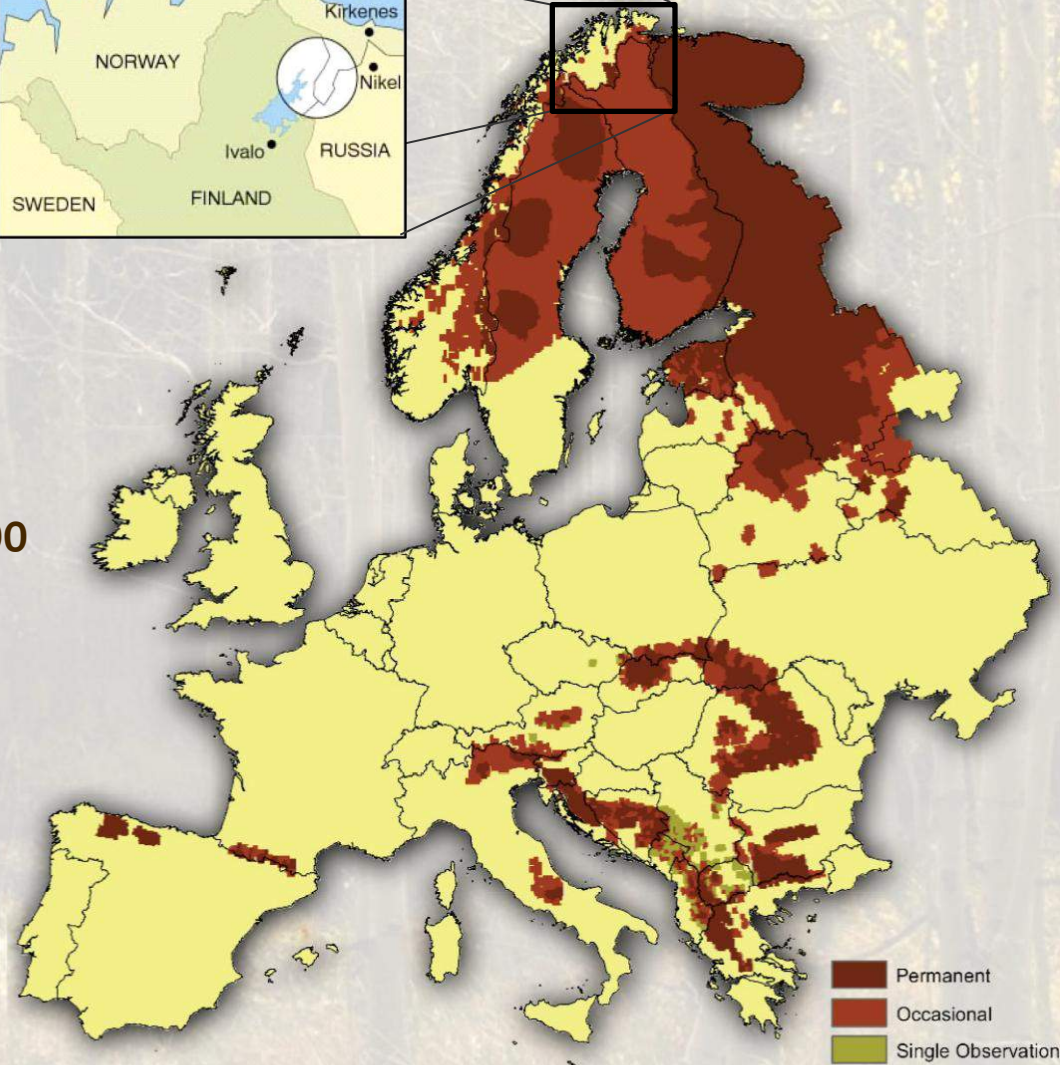
METSÄHALLITUS

Pasvik Inari

Trilateral Park



Brown bear distribution in Europe



European Russia: ~40.000
(Kolesnikov 2009)

Finland: ~2000
(Kojola, pers. comm)

Norway: 151
(Tobiassen et al. 2012)

Sweden: 3300
(Kindberg et al. 2011)

What methods do we have to study bears?



- Observations
- Dead bears
- Marked and collared individuals
- Non-invasive sampling



Photo: Staffan Widstrand



Photo: FGRI

Noninvasive genetic sampling techniques



- Biological samples
- No contact with the animal
- Genetics for identification
- Capture-mark-recapture



www.bioforsk.no/svanhovd

Drawing by Leif Ollila



Photo: Alexander Kopatz



Photo: Sari Magga

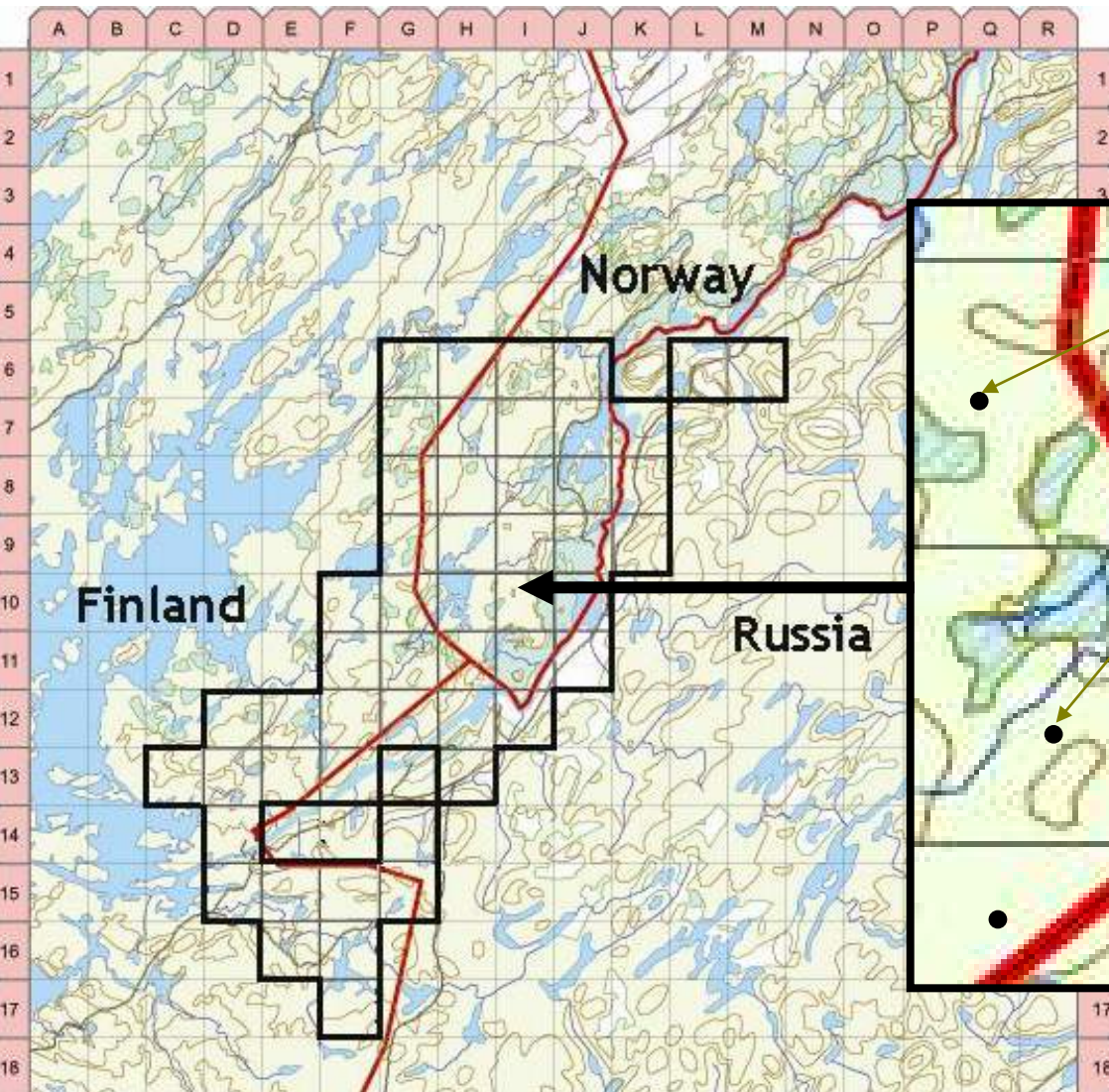


Photos: Alexander Kopatz



Photos: Alexander Kopatz

Hair-trapping



1 hair snare
per 5x5 km grid

Check snares
at least every
2 weeks

Move the snares
once each month
within the
same grid

Snare
placement was
localized in
advance to
avoid potential
conflicts with
people



Hair trapping 2007 and 2011 in Pasvik



2007

56 traps
5 x 5 km grid (1400 km²)
for 2 months
0.17 individuals/10 km²

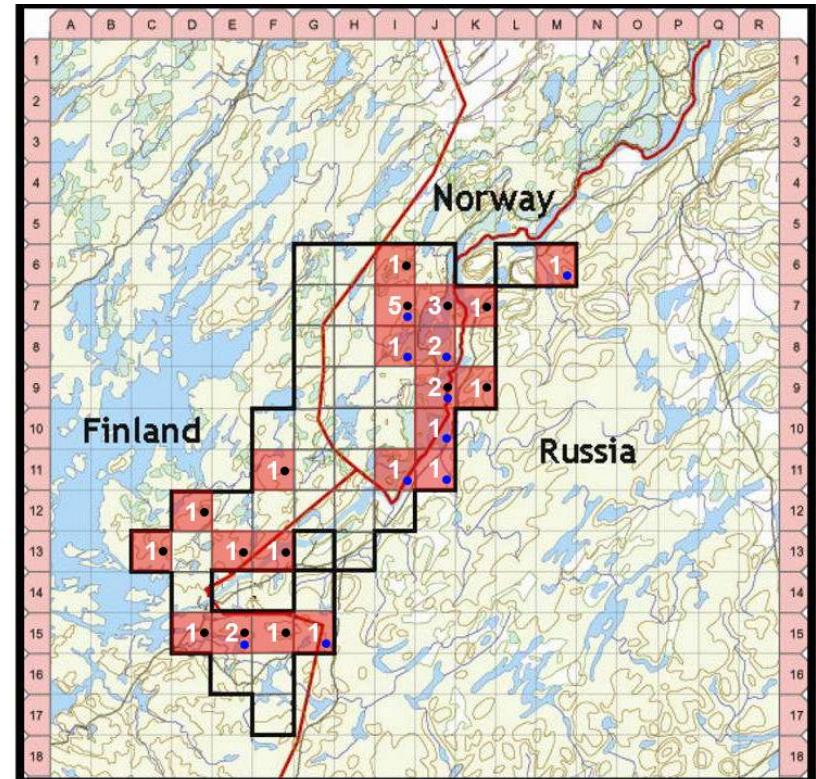
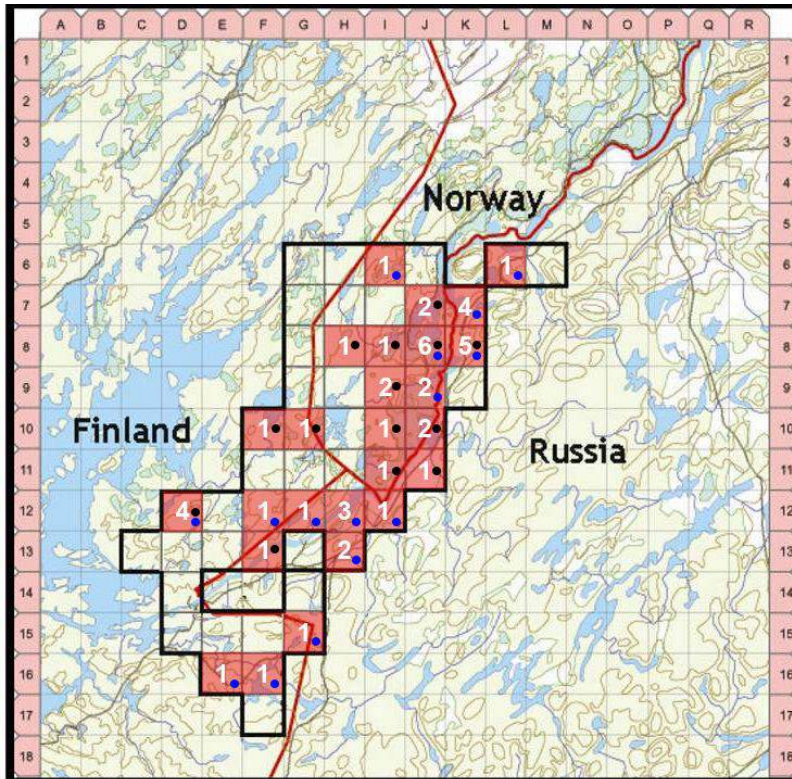
196 samples collected
26 of 56 grids showed activity
24 bears identified (10 females, 14 males)
11 new identified, 13 known

2011

56 traps
5 x 5 km grid (1400 km²)
for 2 months
0.14 individuals/10 km²

88 samples collected
27 of 56 grids showed activity
20 bears identified (12 females, **8** males)
4 new identified, **16** known

Hair trapping 2007 and 2011 in Pasvik



2007



Photo: Martin E. Smith

2011



Photo: Alexander Kopatz



Photos: Bioforsk Svanhovd, Alexander Kopatz

Hair trapping 2007 and 2011 in Pasvik

In summary:

- less samples and found a slight decrease in detected brown bears
- both findings may be caused by less bear activity within the study area, compared to 2007
- No new individuals in Pasvik
- sensor triggered cameras did not record any harm to wildlife when using hair-trapping



Photo: Bioforsk Svanhovd

ID	Gender	MU09	MU09	Q30L	MU10	MU11	MU12	MU13	MU14	MU15	MU16	MU17	Registered in					
FI101	M	117	127	110	114	182	182	145	149	170	172	120	124	145	145	226	242	2010
FI105/MO15	M	115	127	098	110	182	180	135	149	170	178	116	130	141	147	226	242	2010
FI109	F	125	125	112	112	182	182	135	147	172	174	124	126	141	149	240	250	2010
FI110	F	121	125	112	116	182	182	135	135	172	176	120	124	139	141	240	250	2010
FI111	F	121	125	112	116	182	182	135	143	172	174	120	124	145	149	240	250	2010
FI38/MO18	F	121	125	110	112	182	182	145	147	174	176	106	106	139	147	240	242	2005, 2007
FI43/MO3	F	109	125	112	112	182	182	135	147	174	176	120	126	139	149	240	248	2005, 2007, 2008, 2009, 2010
FI64/LL21	F	115	127	112	118	184	192	135	145	172	174	120	134	139	141	240	250	2007
FI69	M	121	127	110	116	184	192	135	145	172	174	120	130	141	145	250	250	2007
FI70	M	115	121	098	130	182	182	145	147	172	174	120	120	145	145	250	250	2007, 2008, 2009, 2010
FI71	M	115	125	098	130	182	184	135	145	170	174	120	126	145	147	236	250	2007, 2008, 2009
FI74	F	121	129	098	116	182	182	135	145	172	172	120	124	141	149	226	250	2007, 2008, 2009, 2010
FI78/MO19	M	115	123	112	116	182	182	147	147	170	172	120	130	145	145	240	248	2008, 2009, 2010
FI98/MO17	F	109	117	112	112	182	182	135	135	172	174	106	106	139	149	242	242	2010
LL22	F	115	127	098	098	184	192	145	147	172	174	120	124	141	145	242	250	2007
LL36	F	115	127	098	110	182	184	135	145	170	176	120	126	145	145	226	250	2011
LL37	F	115	127	110	112	180	182	135	147	172	172	120	130	145	145	248	250	2011
LL38	M	109	117	110	112	182	184	135	135	172	172	106	130	141	145	240	250	2011
LL39	F	109	115	098	112	182	184	135	147	172	172	120	130	141	145	240	250	2011
MO8/LL44	M	115	123	102	112	172	184	147	147	168	170	106	118	149	151	226	243	2007

DNA-profiles

STR-markers and
gender



DNA-profile

Sample No.	G1D	G10B	MU05	MU09	MU15	MU26	Gender	Ind.
1	123/127	109/109	114/116	96/124	111/115	82/82	Male	A
2	121/121	97/99	114/116	96/120	113/115	82/86	Female	B
3	123/127	109/109	114/116	96/124	111/115	82/82	Male	A

- Probability of identity (10 STRs) = 5.67×10^{-10}
- Probability of sibling identity (10 STRs) = 1.68×10^{-4}

Database for monitoring, research and forensics

Internt_Prøvenr	Eksternt_Prøvenr	ID	Land	InnsamlingsÅR	FunnDate	Materiale	Individ	Individ_Norge
BH319	F16-4-A	1048	Finland	2007	20.08.2007	Hair		
BH320	F16-4-B	1049	Finland	2007	20.08.2007	Hair		
BH321	G10-4-A	1050	Finland	2007	21.08.2007	Hair		FI64
BH322	F10-4-A	1051	Finland	2007	21.08.2007	Hair		
BH323	F10-4-B	1052	Finland	2007	21.08.2007	Hair		

Individer	Kjønn	G1D	G10B	MU05	MU09	MU15	MU26
FI1	M	125 / 125			122	109 / 113	82 / 82
FI10	F	123 / 127			118	111 / 115	82 / 82
FI11	M	127 / 133			118	111 / 115	82 / 82
FI12	M	127 / 127			118	111 / 111	82 / 82
FI13	M	121 / 121					82 / 82
FI14	F	123 / 127			122	109 / 115	82 / 90
FI15	M	121 / 131			124	115 / 117	82 / 86
FI16	-	123 / 123			114	109 / 109	82 / 90
FI17	M	121 / 123			124	113 / 117	82 / 86
FI18	M	121 / 133			100 / 117	90 / 90	
FI19	F	125 / 135			114		
FI2	M	127 / 131			16		
FI20	M	125 / 125			122		
FI21	M	123 / 125			110		
FI22	F	127 / 131			124		
FI23	M	123 / 135			114		
FI24	M	123 / 135	97 / 97	120 / 120	110 / 110		

Sorter fra A til Å
 Sorter fra Å til A
 Ejern filter fra G1D
 Tekstfiltre

- (Merk alt)
- (Tomme)
- 121 / 121
- 121 / 123
- 121 / 125
- 121 / 131
- 121 / 133
- 121 / 135
- 123 / 123
- 123 / 125

OK Avbryt



Available online at www.sciencedirect.com
 ScienceDirect

Forensic Science International: Genetics Supplement Series 2 (2009) 273–274



www.elsevier.com/locate/FSIGSS

Research article

Population data for 12 STR loci in Northern European brown bear (*Ursus arctos*) and application of DNA profiles for forensic casework

H.G. Eiken^{a,*}, R.J. Andreassen^b, A. Kopatz^c, S.G. Bjervamo^a, I. Warttiainen^a,
 C. Tobiasen^a, P.M. Knappskog^a, P.E. Aspholm^a, M.E. Smith^a, J. Aspi^c

^aBioforsk Svanhovd, Norwegian Institute for Agricultural and Environmental Research, Svanhovd, N-9925 Svanvik, Norway

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Received 17 July 2009; accepted 29 July 2009

Scientific publications



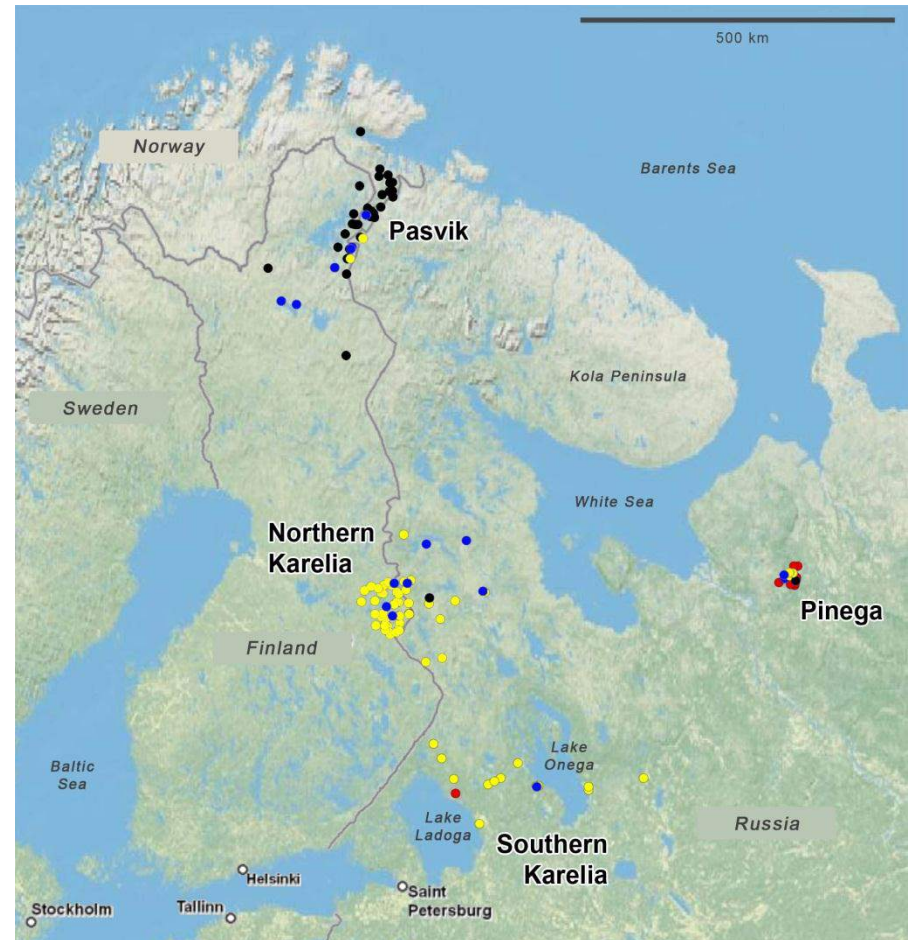
- Data from hairtrapping projects contributed to scientific publications:

Schregel et al. (2012): Limited gene flow among brown bear populations in far Northern Europe? Genetic analysis of the east-west border population in the Pasvik Valley. **Molecular Ecology 21 (14): 3474-3488**

Kopatz et al. (2012): Connectivity and population subdivision at the fringe of a large brown bear (*Ursus arctos*) population in North Western Europe. **Conservation Genetics 13 (3): 681 - 692.**

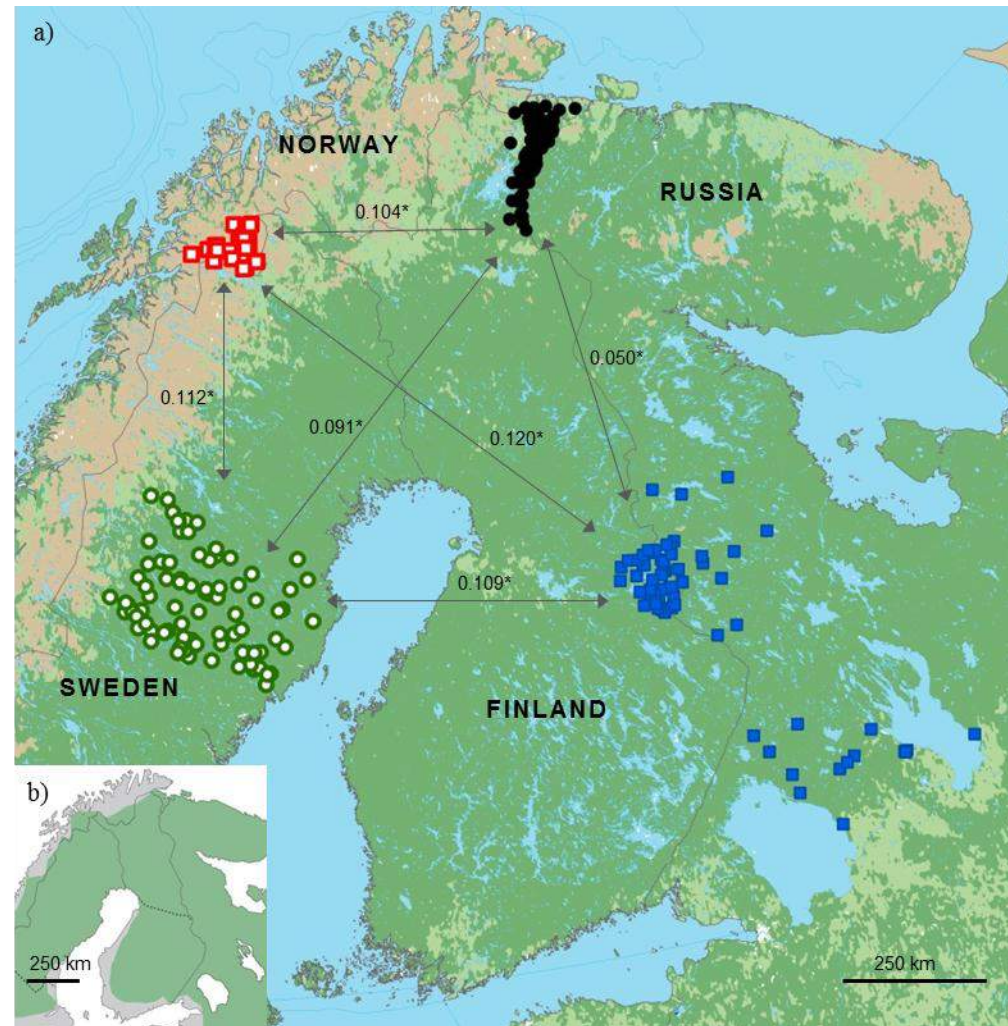
Kopatz et al. (2012):

- Limited gene flow between the northern and southern populations
- Possible geographic barriers between north and south
- Strong isolation-by-distance pattern overall



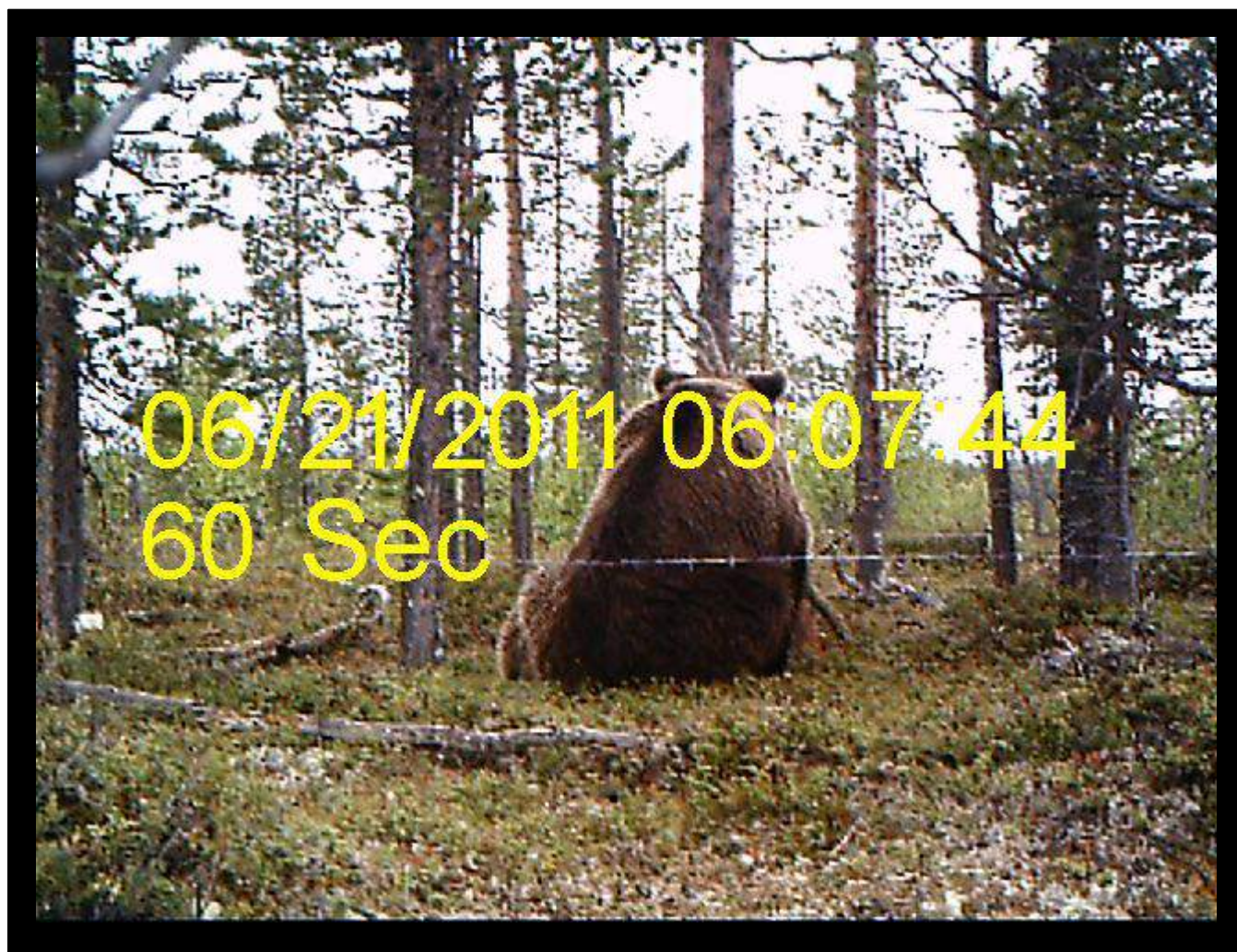
Schregel et al (2012):

- Pasvik population at fringe of large eastern population
- Limited geneflow towards the west
- Population size N_c : 40-70 bears
- Breeding population N_e : 12-25 bears



International collaborators and funding:

- Pasvik Nature Reserve (Russia): Olga Makarova, Natalia Polikarpova, Vladimir Chizhov
- Metsähallitus (Finland): Tuomu Ollila;
- Assistance in the field: Magne Asheim (SNO), Jørn Monsen (SNO), Sari Magga, Veli-Matti Kangasniemi, Jari Kangasniemi, Petteri Polojärvi, Gennady Dmitrenko, Alexander Karachevtsev and Yury Snegirev
- Funding: Office of the Finnmark County Governor, Nordic Council of Ministers, Bioforsk and partners



Male bear FI78/MO19, 21.06.2011, 07:44, Pasvik Valley