

Status and management of large carnivores in Estonia

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Photo: Toomas Tuul

1. Monitoring

- Recording of sight and track observations*
- Data from hunted individuals*
- Winter track census on permanent transects*
- Damage surveys
- Independent track observations in certain areas
- Telemetry

*Data collection is hunter`s duty by hunting law

Observations

- Occasional recordings of sight and track observations
- All year round
- Date, coordinates, group size (number of juveniles)



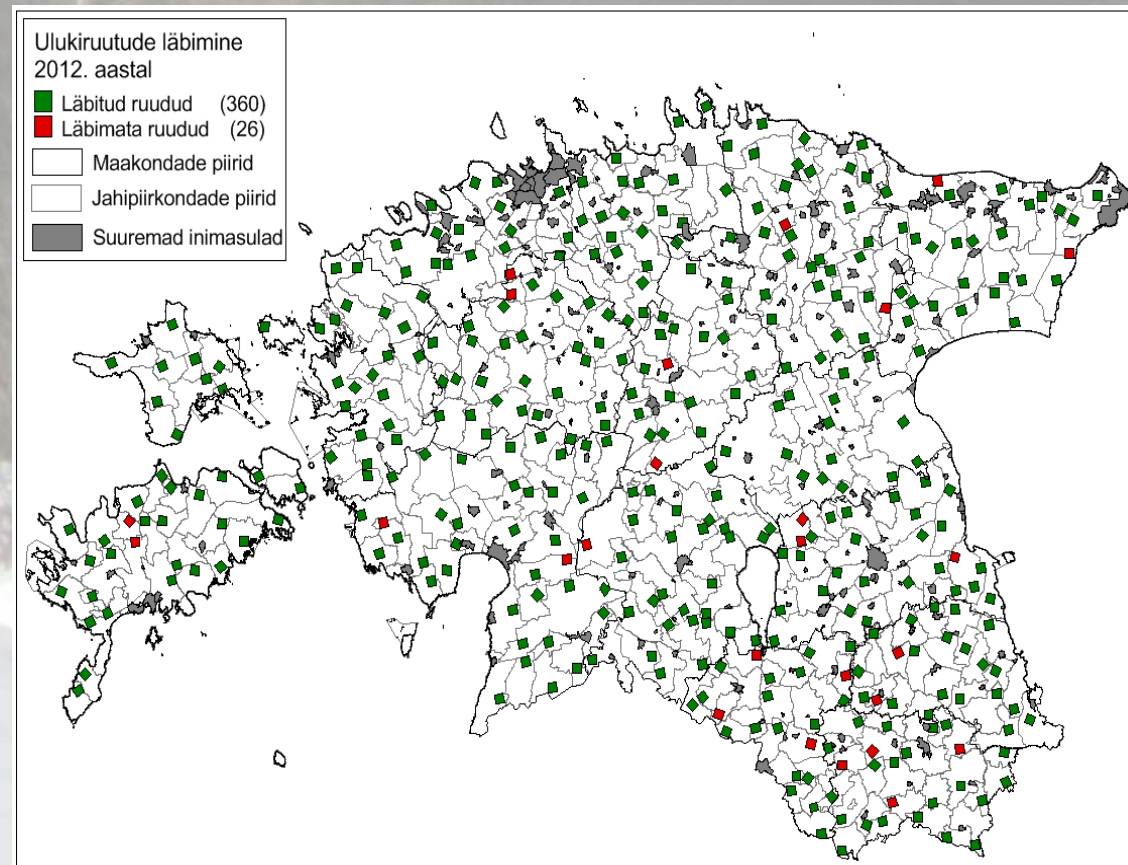
Hunted individuals

- Date, coordinates, sex, main body measurements, health status (scabies)
- Biomaterial: teeth samples, uterus with ovaries, DNA samples
- 100 % of hunted /dead by other reasons individuals



Winter track census

- 3x4 km permanent transects (390)
- Once in every winter
- Crossed tracks are counted
- Track index - tracks per 1 km as a result
- Trends for 17 species including wolf and lynx



Damage inspection

- Damage cases are inspected by experts of Environmental Board



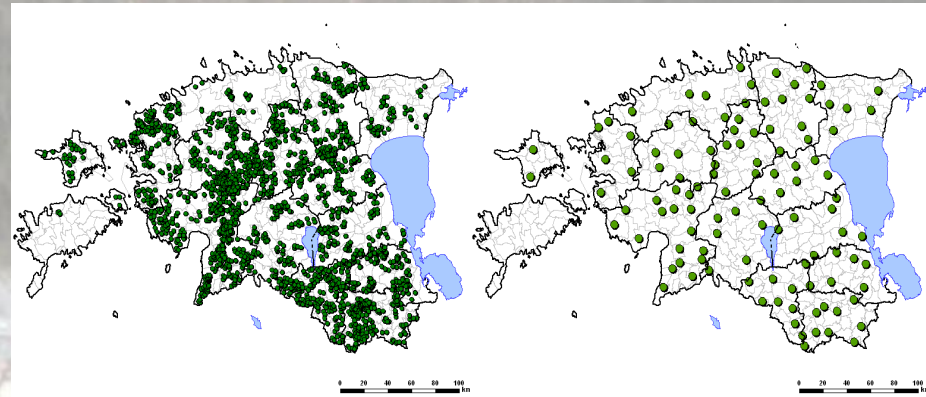
Telemetry

- 18 lynx (since 2008) and 8 wolves (since 2011) are collared with GPS-GSM transmitters



Data analyse and results*

- Analysing of all collected data and material
- Main result is number and location of unique reproductive units



- Annual population status reports (last one: http://www.keskkonnaagentuur.ee/sites/default/files/seirearuanne_2016.pdf)
- Reproduction prognosis and proposals of hunting quotas for next season

2. Management

- National LC management plan for 2012-2021

English version available:

http://www2.nina.no/lcie_new/pdf/635379340188248258_LC_action%20plan_Estonia_2012-2021.pdf

- Objective to keep the number of reproductive units:
 - Wolf: 15-25
 - Lynx: 100-130
 - Brown bear: at least 60*

*females with cubs of-the-year

Hunting seasons

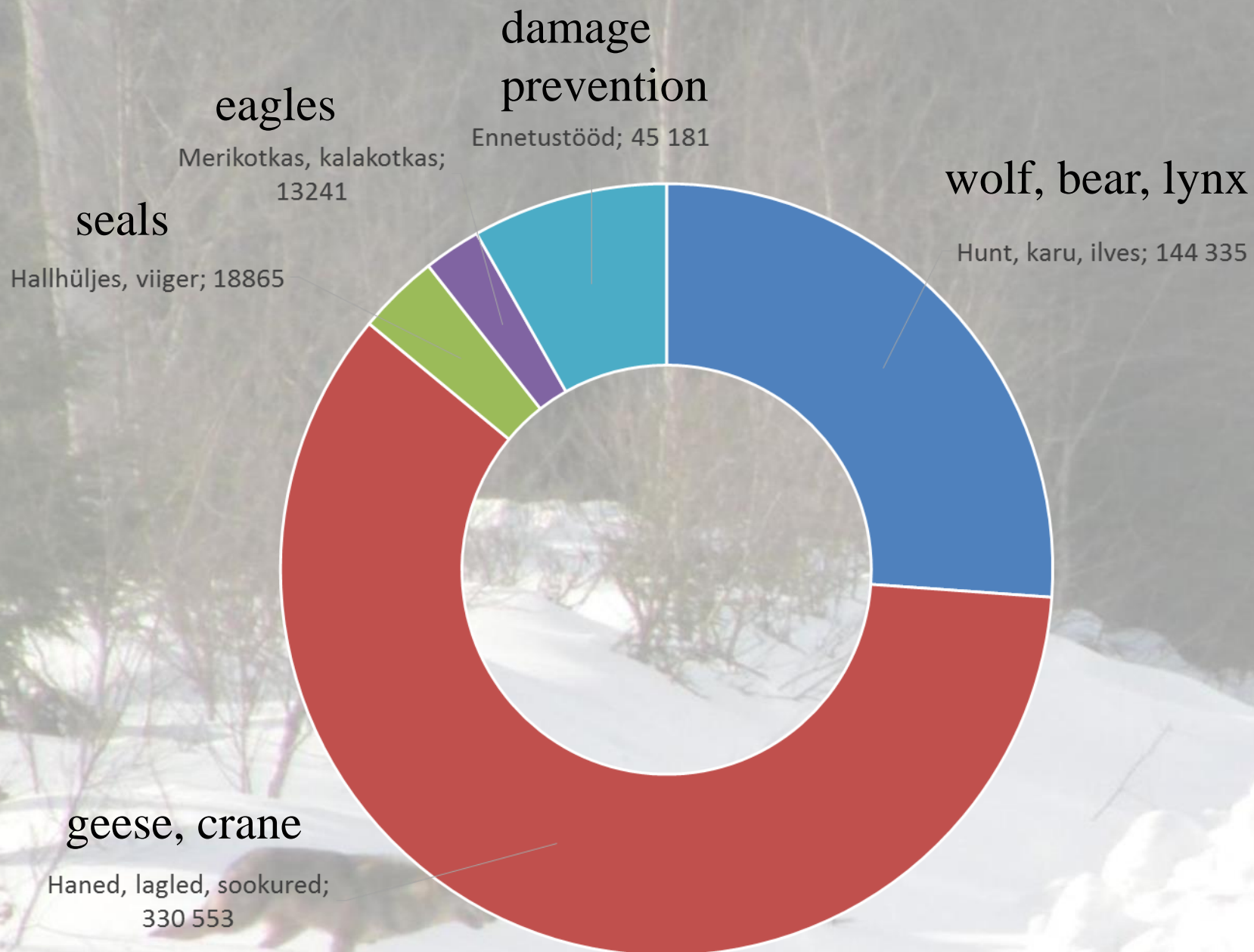
- **Wolf:** November-February
(with temporary exception for islands: October-March)
- **Lynx:** December-February
- **Brown bear:** August-October
- Lynx and bear: hunting on females accompanied with offsprings is prohibited
- Brown bear: Driven hunt and hunting with dogs is not allowed

Establishment of hunting quotas

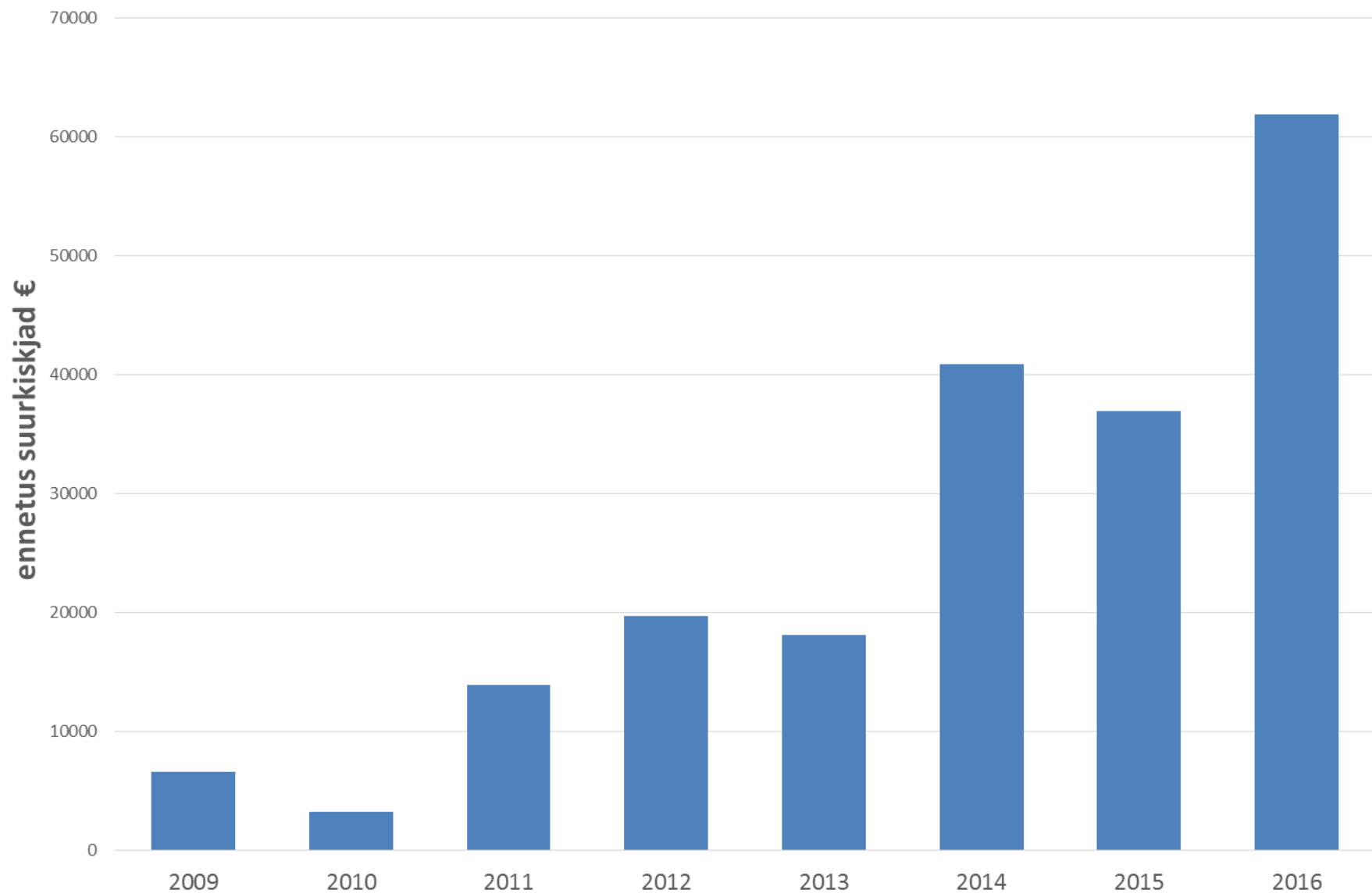
- **Lynx and Brown bear:** quota shared by counties
- **Wolf:** mainly shared by counties, sometimes by the other temporary management units
- Density, habitats and damages are taken into account
- **Wolf** quota is given in two parts: first one before and the second one during the hunting season
- **Brown bear** buffer zones (e.g. 50 km) along the Latvian border are implemented time to time supporting the distribution southwards

Damage management

- **Damage compensation** – 100 % (- little sum of own responsibility) since 2008
- **Subsidies** for preventive measures – 50 %
- Money from Environmental Investment Centre
- **Zoning** is partly used for wolf hunting– lower hunting pressure in wilder and higher in semi-cultural habitats
- Certain part of (bear, wolf) hunting quota directed to areas of higher depredation rate



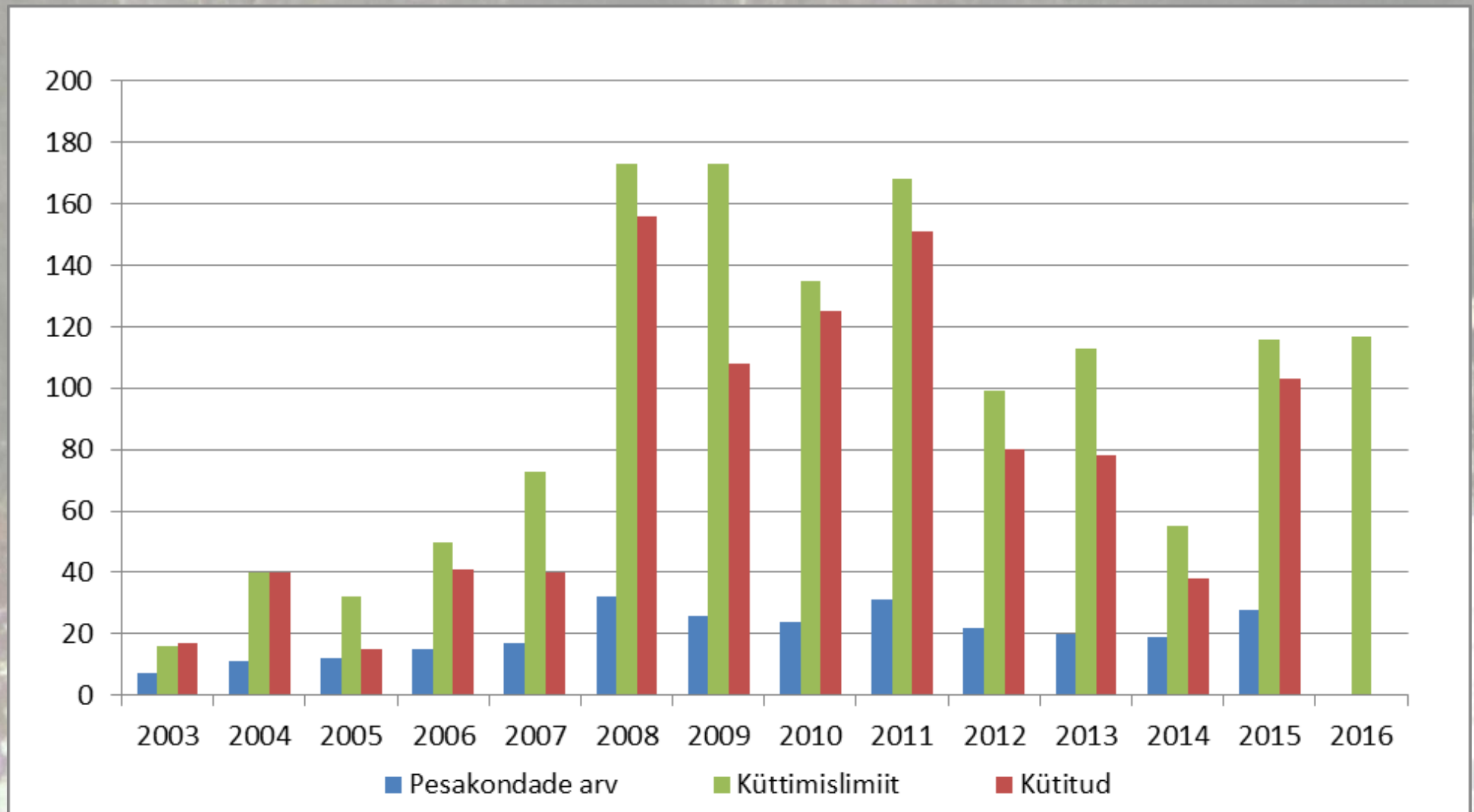
Money paid by state for wild animal damages in 2015 in €



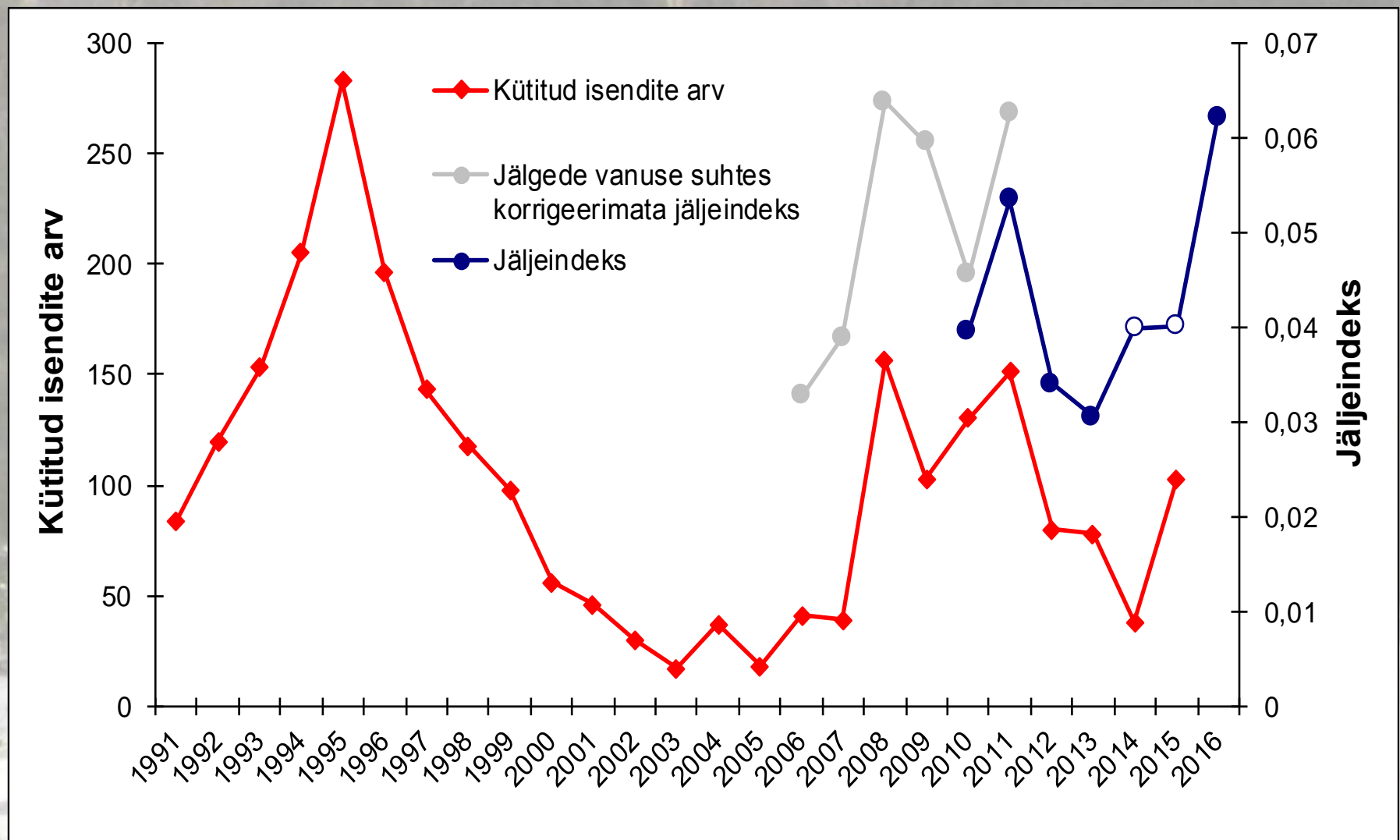
State subsidies for LC damage prevention in 2009-2016 in €

3. Population dynamics

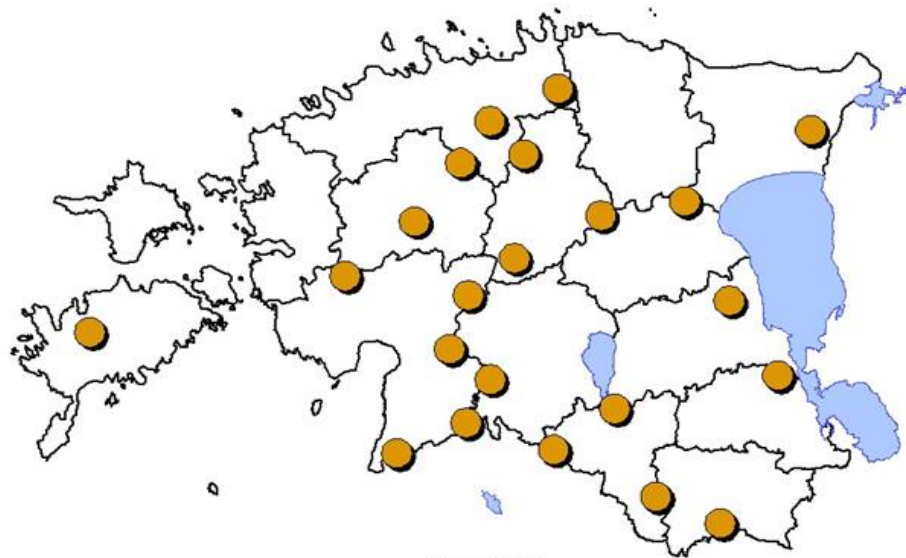
Wolf



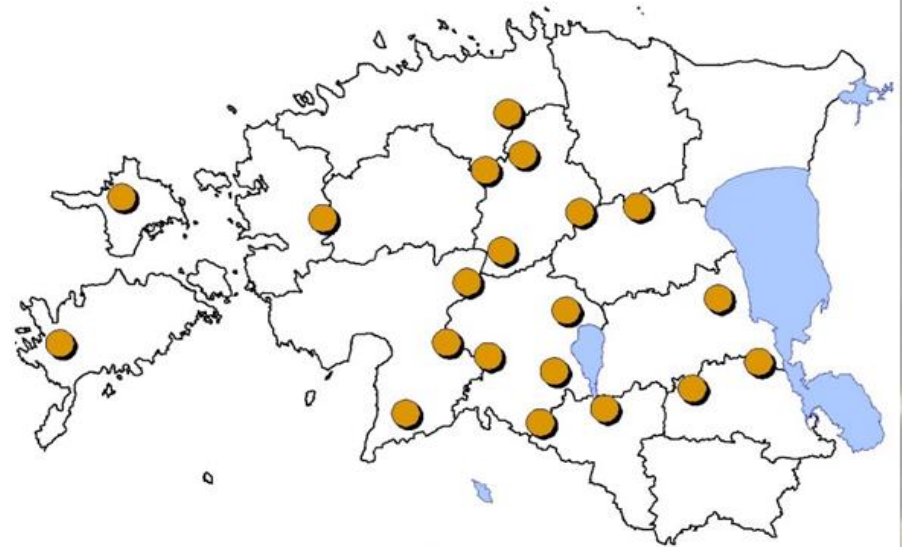
Number of wolf reproductive packs (blue), hunting quota size (green) and number of hunted individuals (red) in 2003 - 2016.



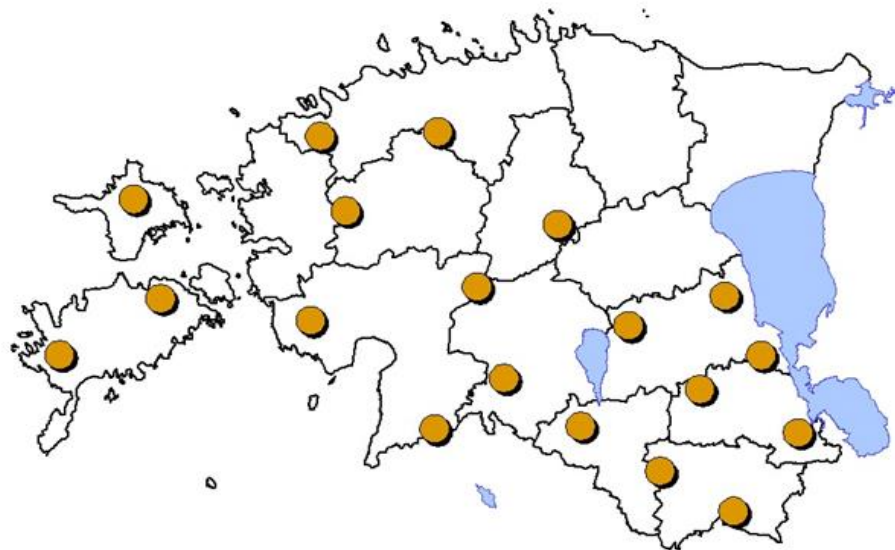
The number of wolf hunted in 1991 – 2015 and winter track index (gray line - tracks per 1 km and blue line - tracks per 1 km per 24 hours).



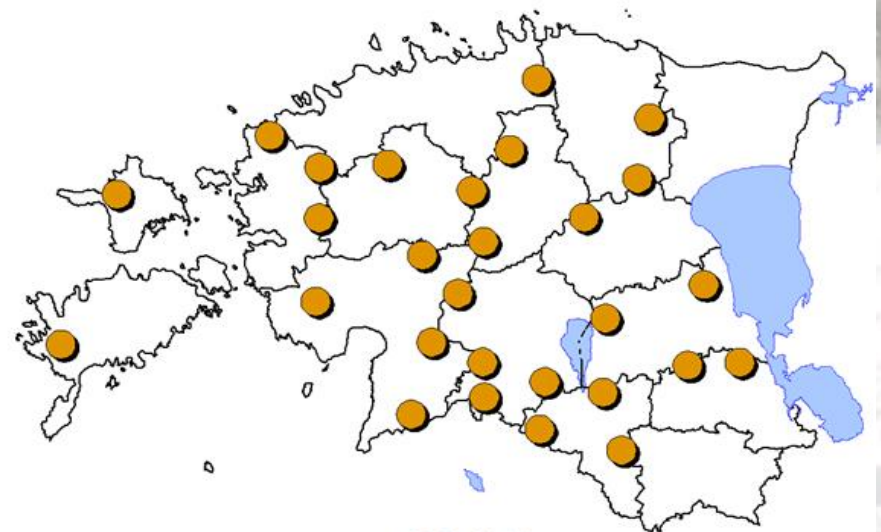
2012



2013



2014

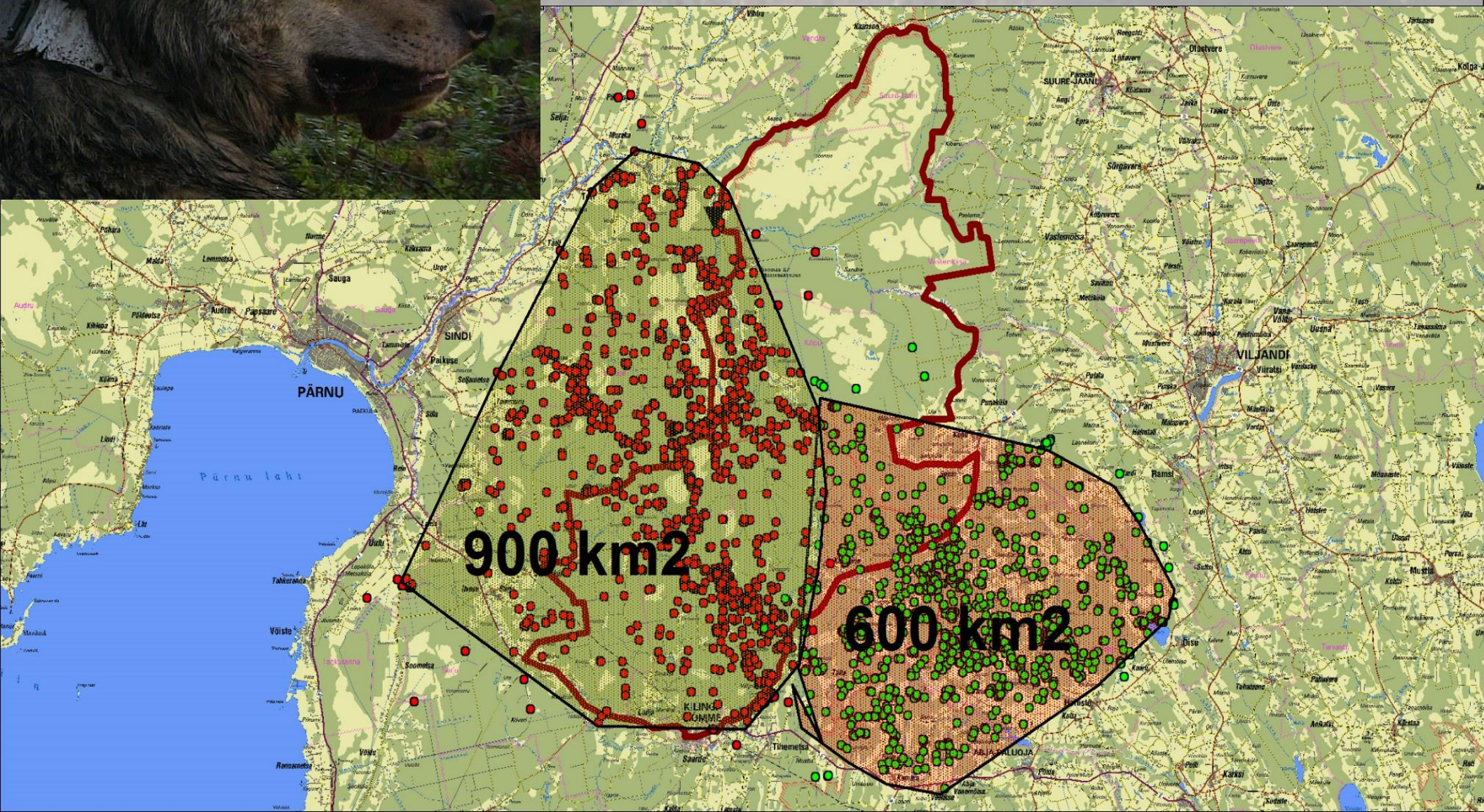


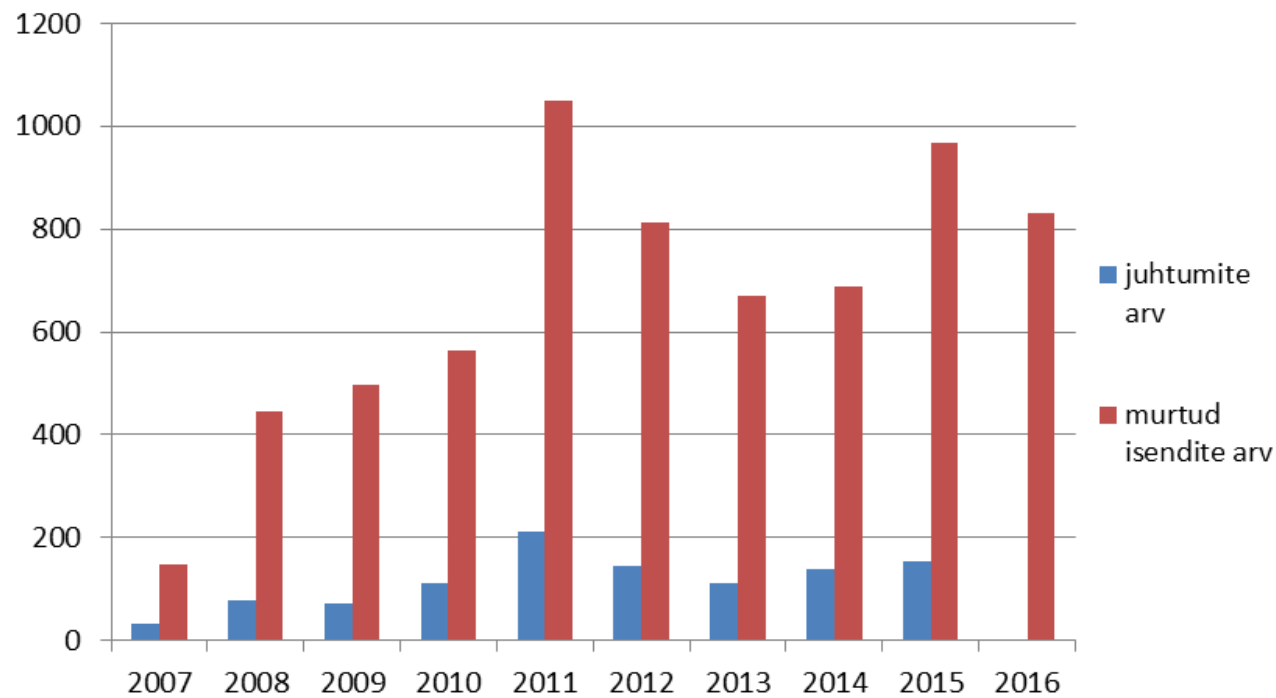
2015

Reproductive wolf packs



Territories of two neighbouring α -females in 2014



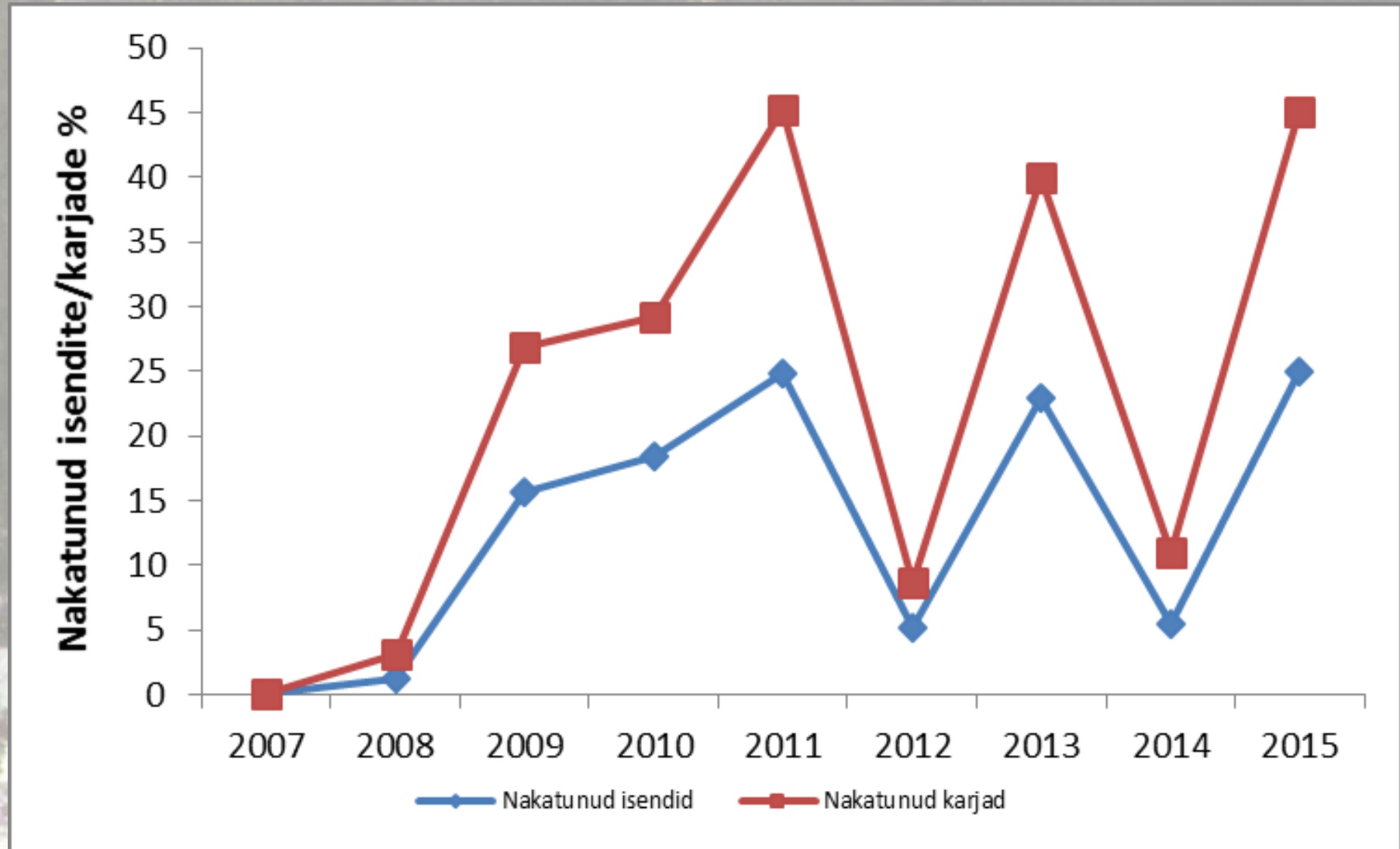


Number of wolf damage cases (blue) and killed sheep (red)



2016 – preliminary result

Spreading of sarcoptic mange in wolf population



Proportion of infected packs (red) and infected individuals (blue) among hunted wolves in 2007-2015



Distribution on African swine fever in wild boars

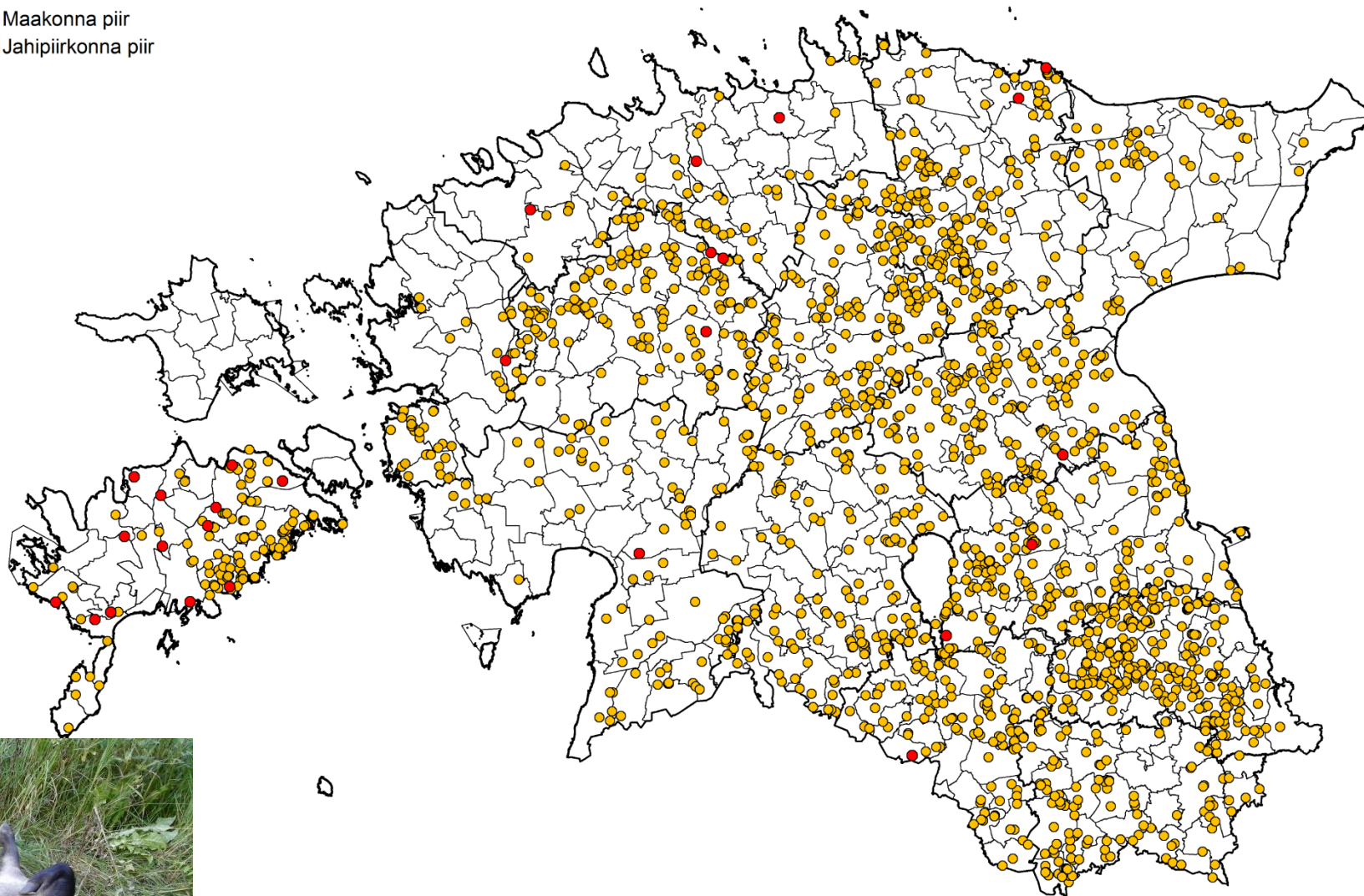
SAK leiud metssigadel

● 11.-17. veebruar 2017

● Varasemad

□ Maakonna piir

□ Jahipiirkonna piir

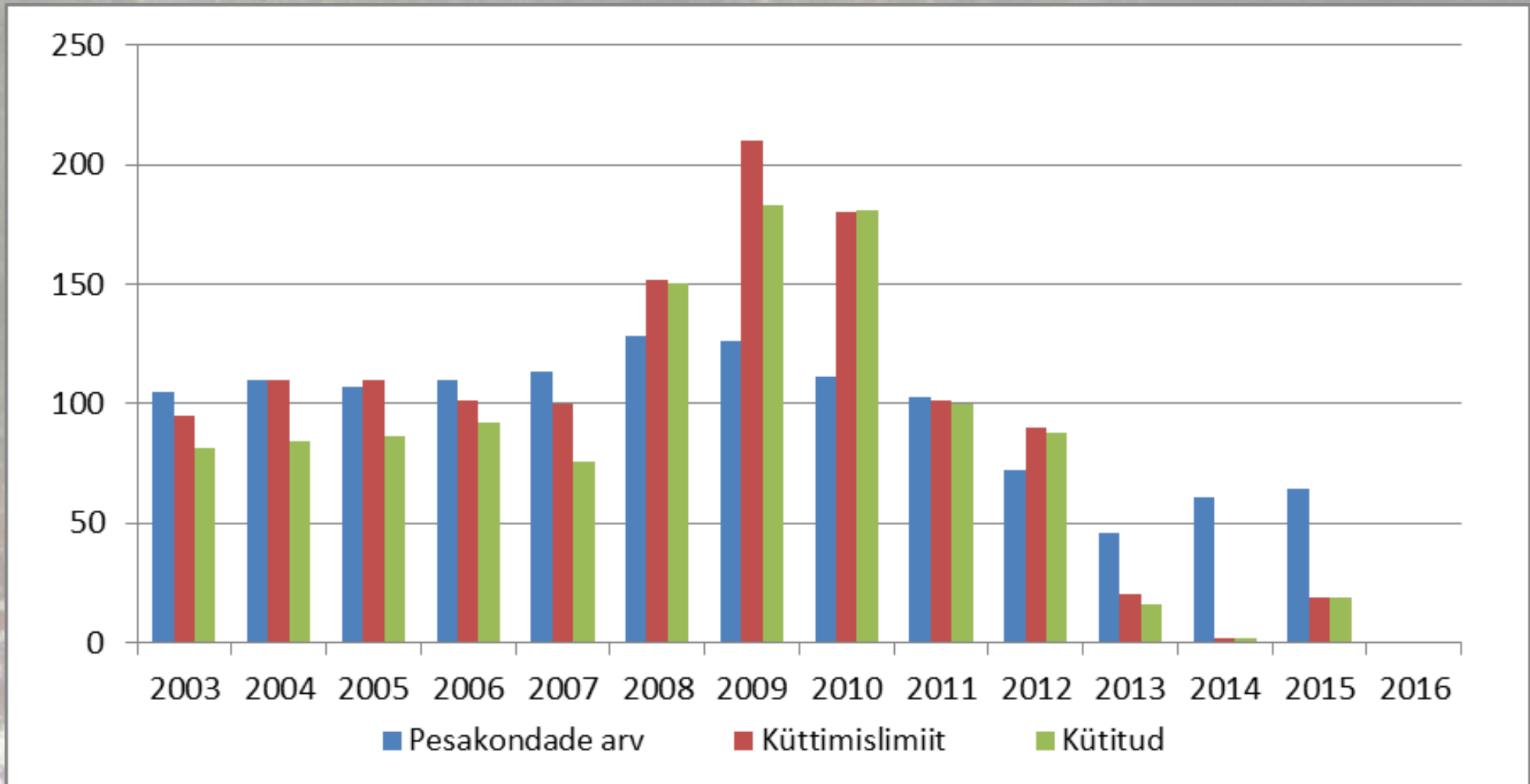


17.2.2017

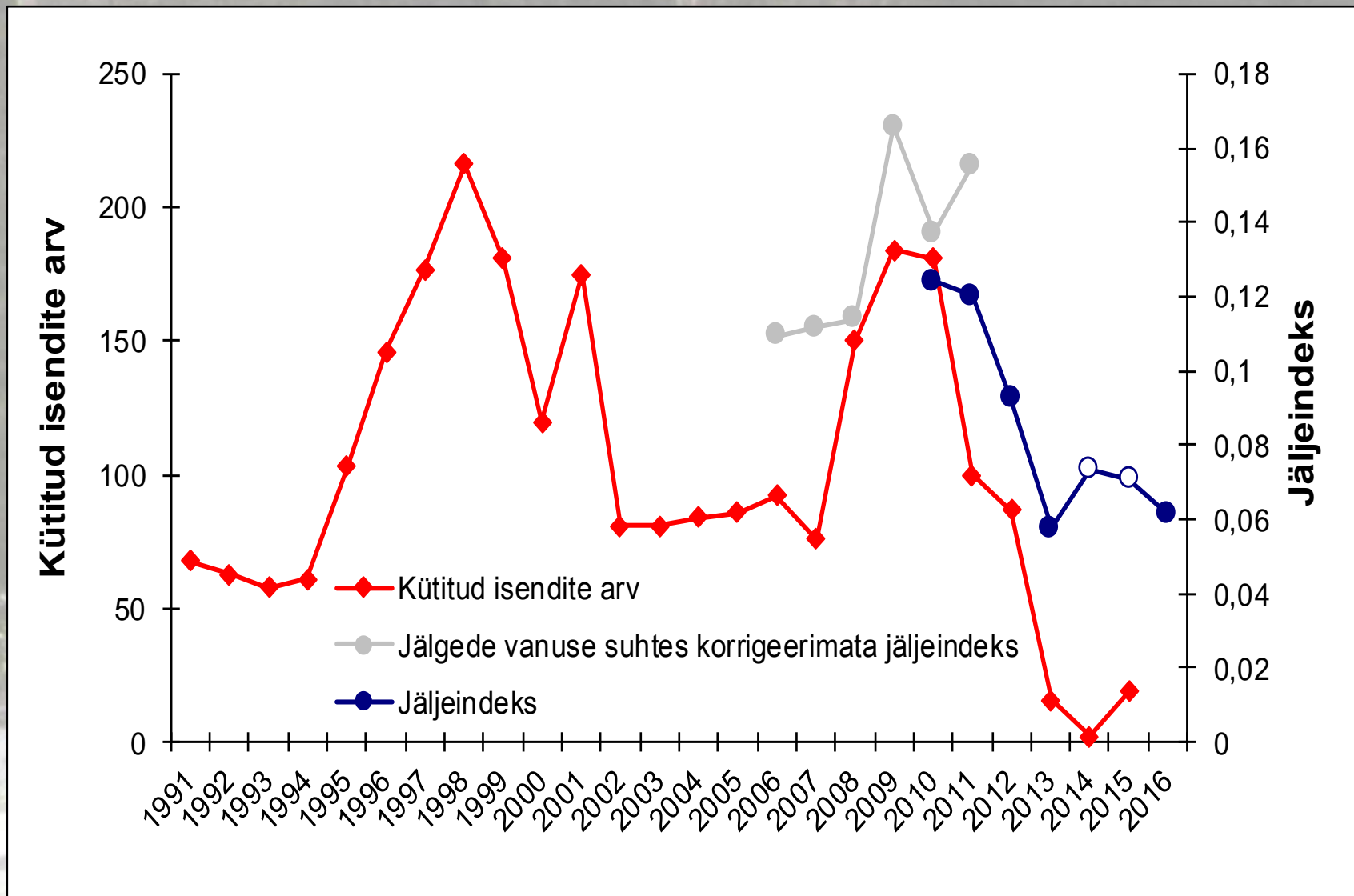


red – last week, yellow - earlier

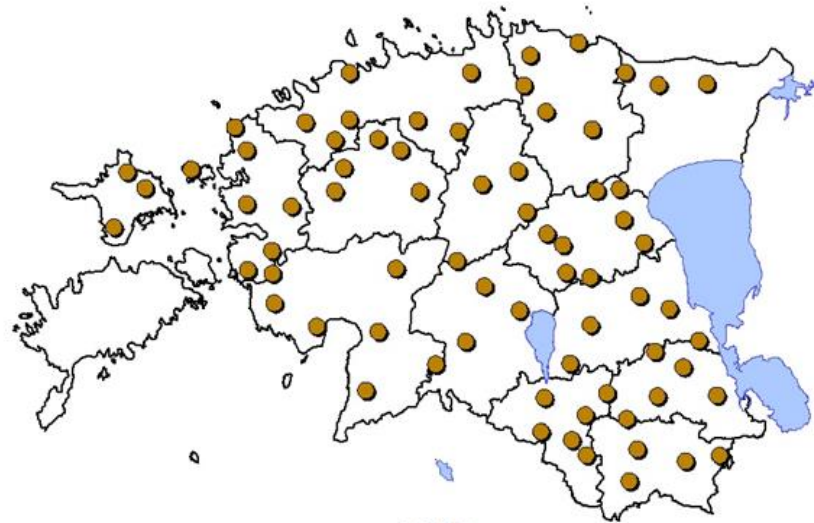
Lynx



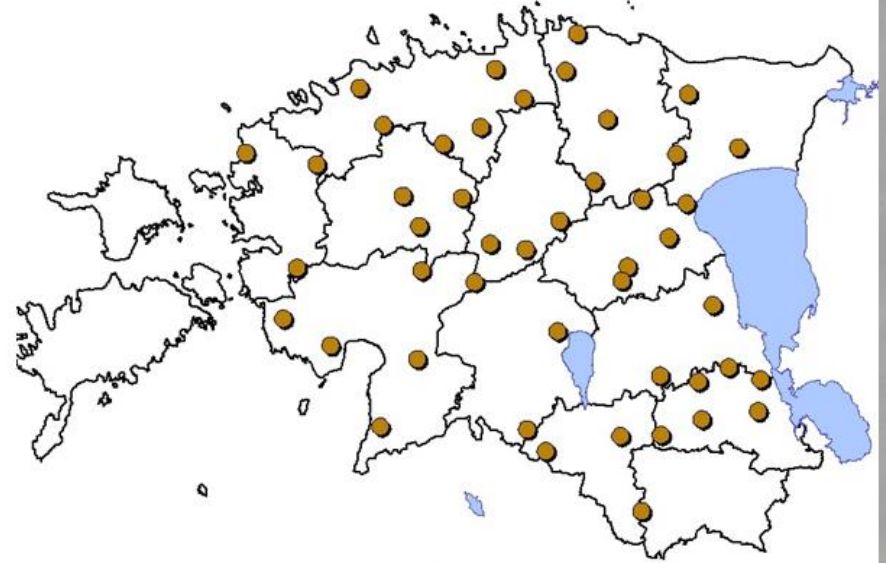
Number of lynx reproductions (blue), hunting quota size (red) and number of hunted individuals (green) in 2003 - 2016.



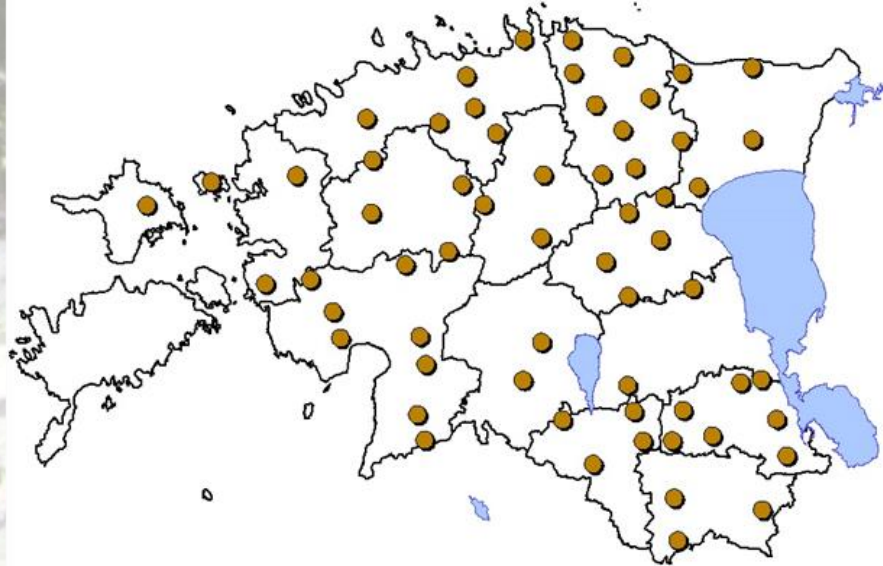
The number of lynx hunted in 1991 – 2015 and winter track index (gray line - tracks per 1 km and blue line - tracks per 1 km per 24 hours).



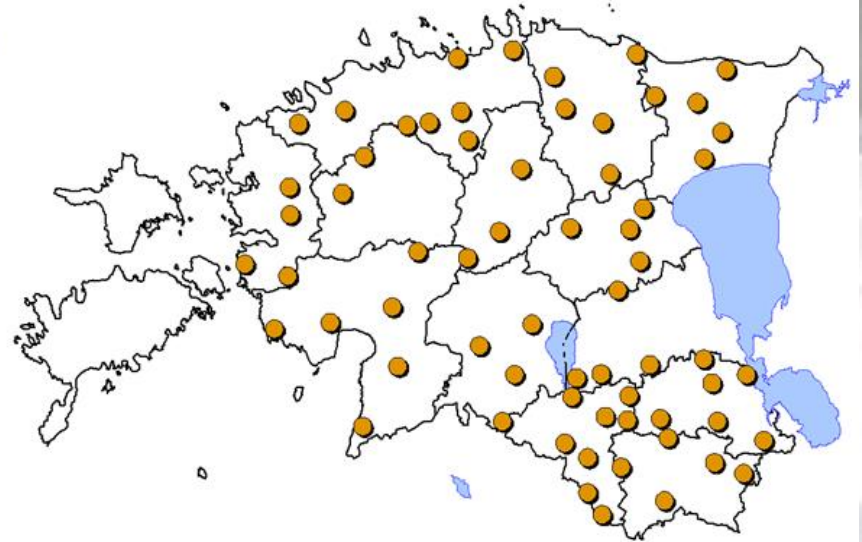
2012



2013



2014

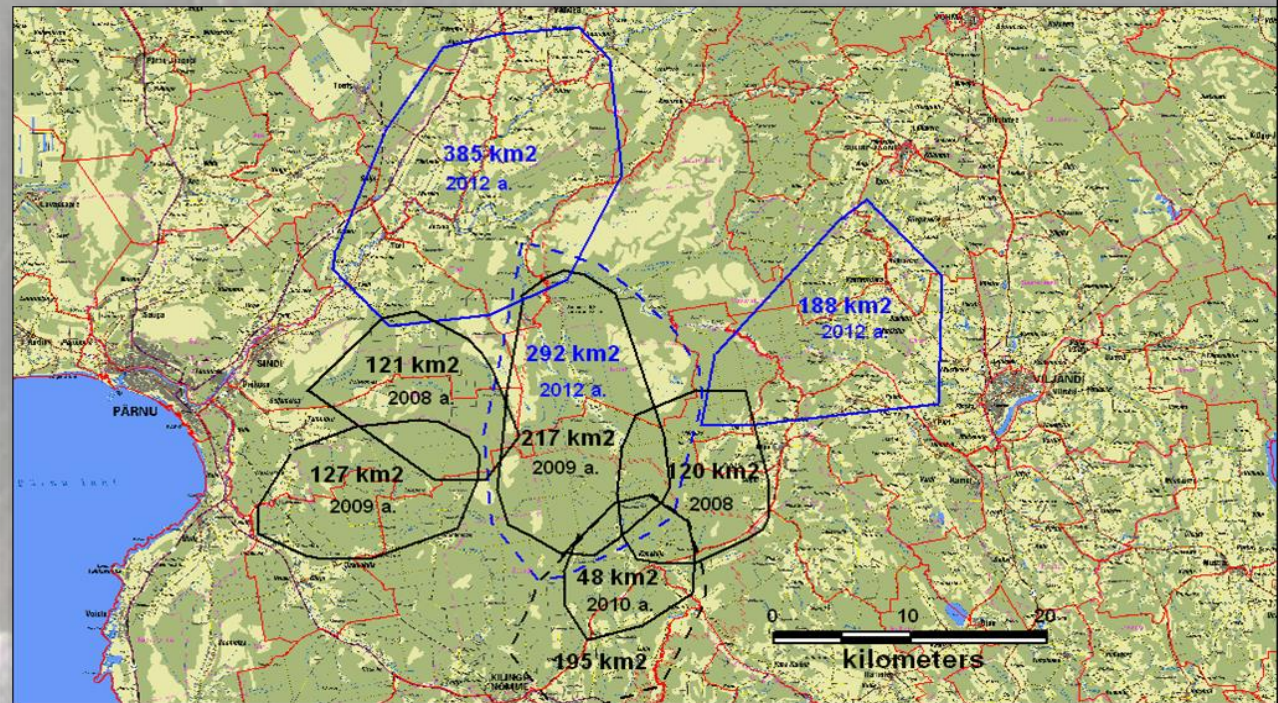


2015

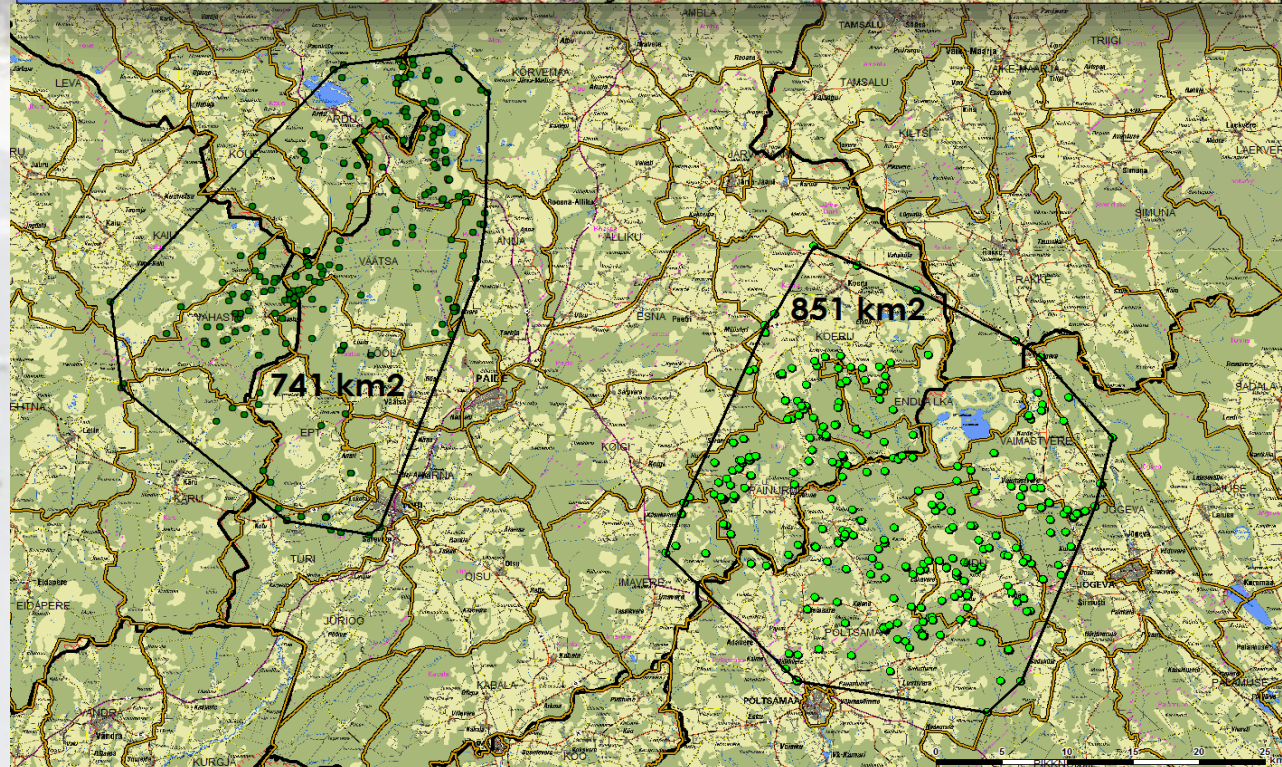
Reproductive lynx females

Home range size of adult males

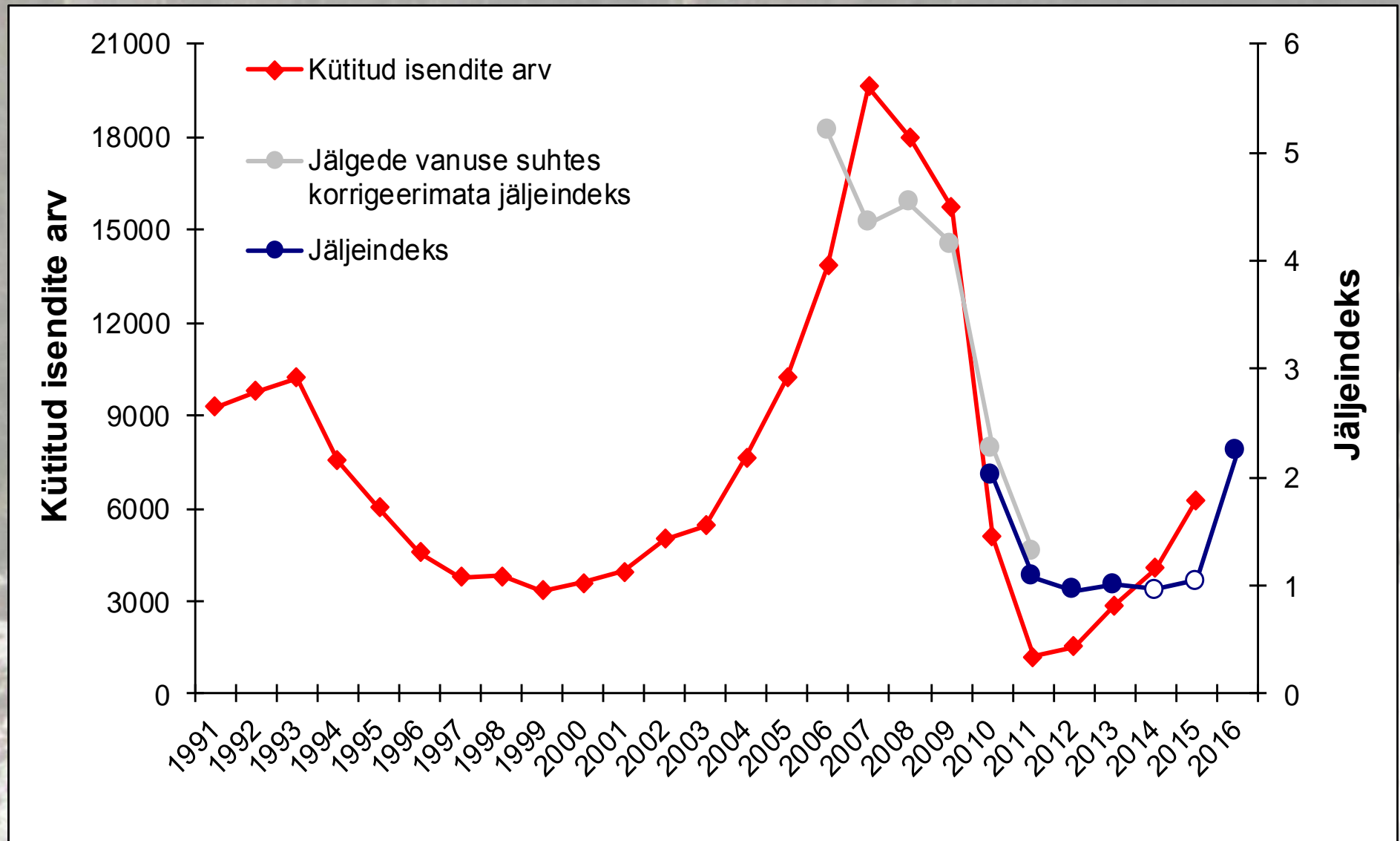
2008-2012



2014



Quick fall of lynx main prey - roe deer in 2009-2011



*The number of **roe deer** hunted in 1991 – 2015 and winter track index (gray line - tracks per 1 km and blue line - tracks per 1 km per 24 hours).*

Why the lynx population crashed?

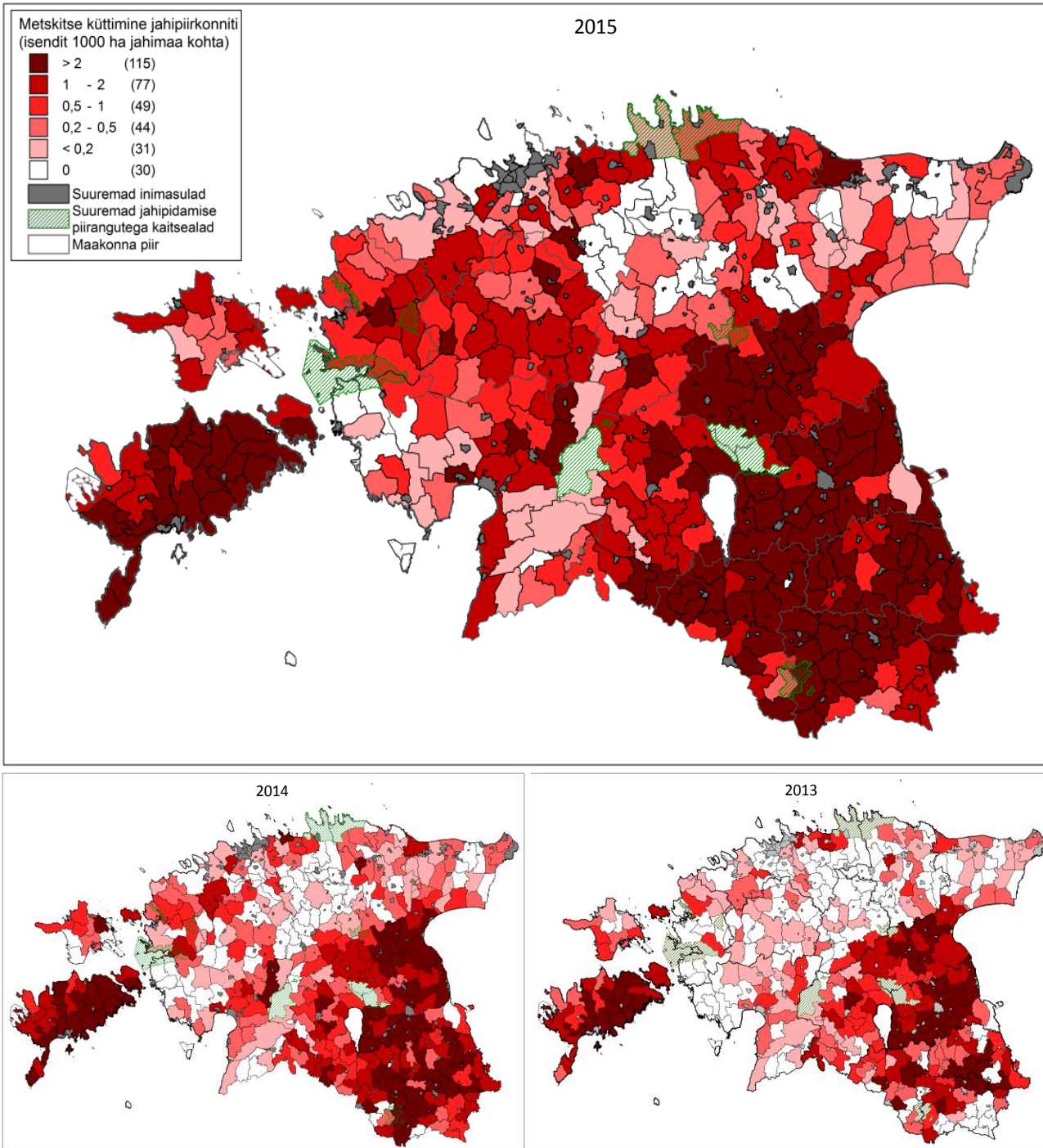
- Too poor food base for raising the kitten
- Too high hunting pressure in 2011 and 2012
- **Why the population doesn't improve as predicted?**
- Sarcoptic mange
- Poaching
- Negative migration

Dispersal of juveniles and subadults

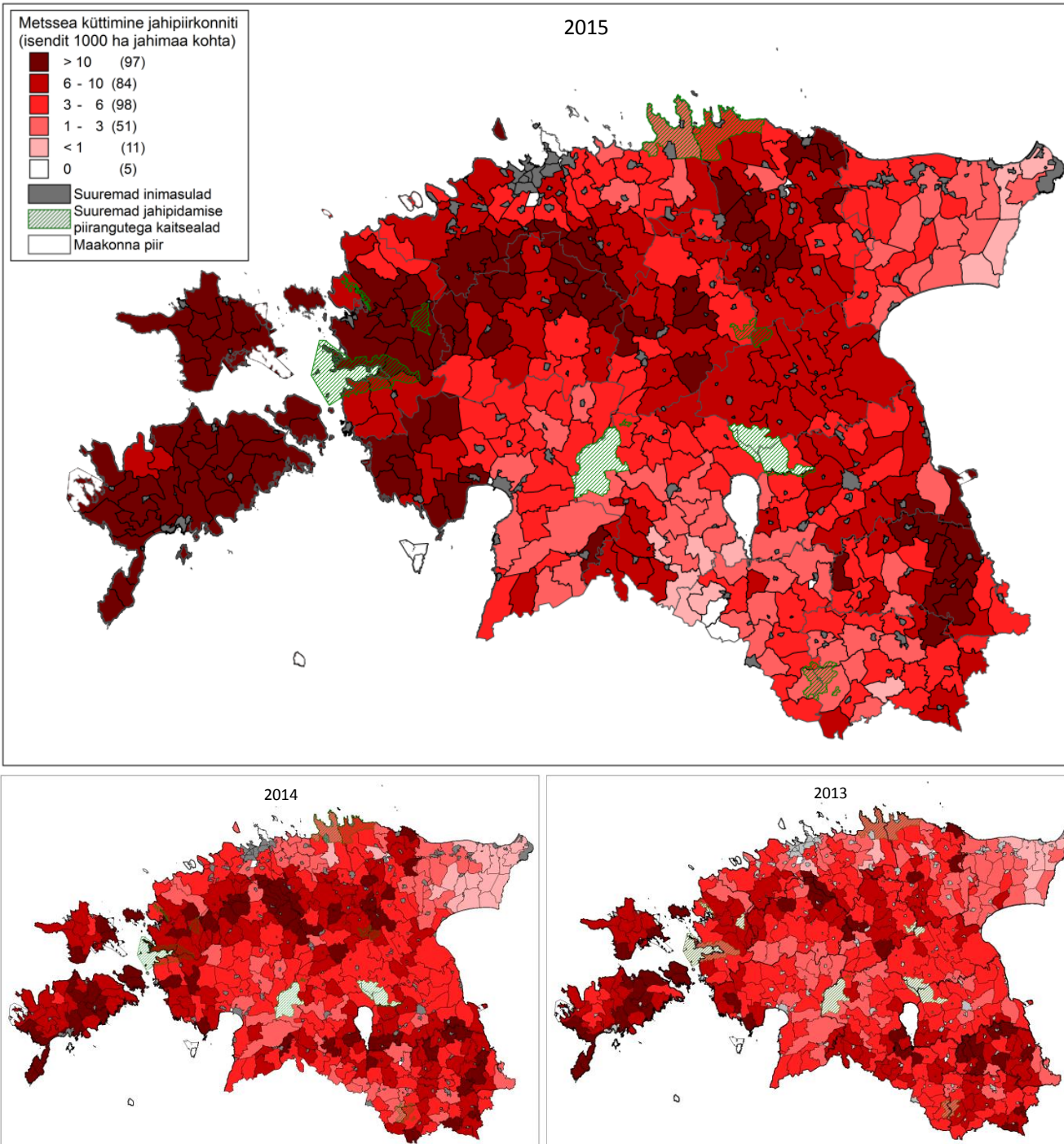


Competition for prey with wolf?

- No correlation between wolf and roe deer density
- No correlation between wolf and lynx density
- Wild boar population crashed when roe deer population was already well recovered
- If both prey populations crashed at the same time, the competition for food might have been really problematic for lynx

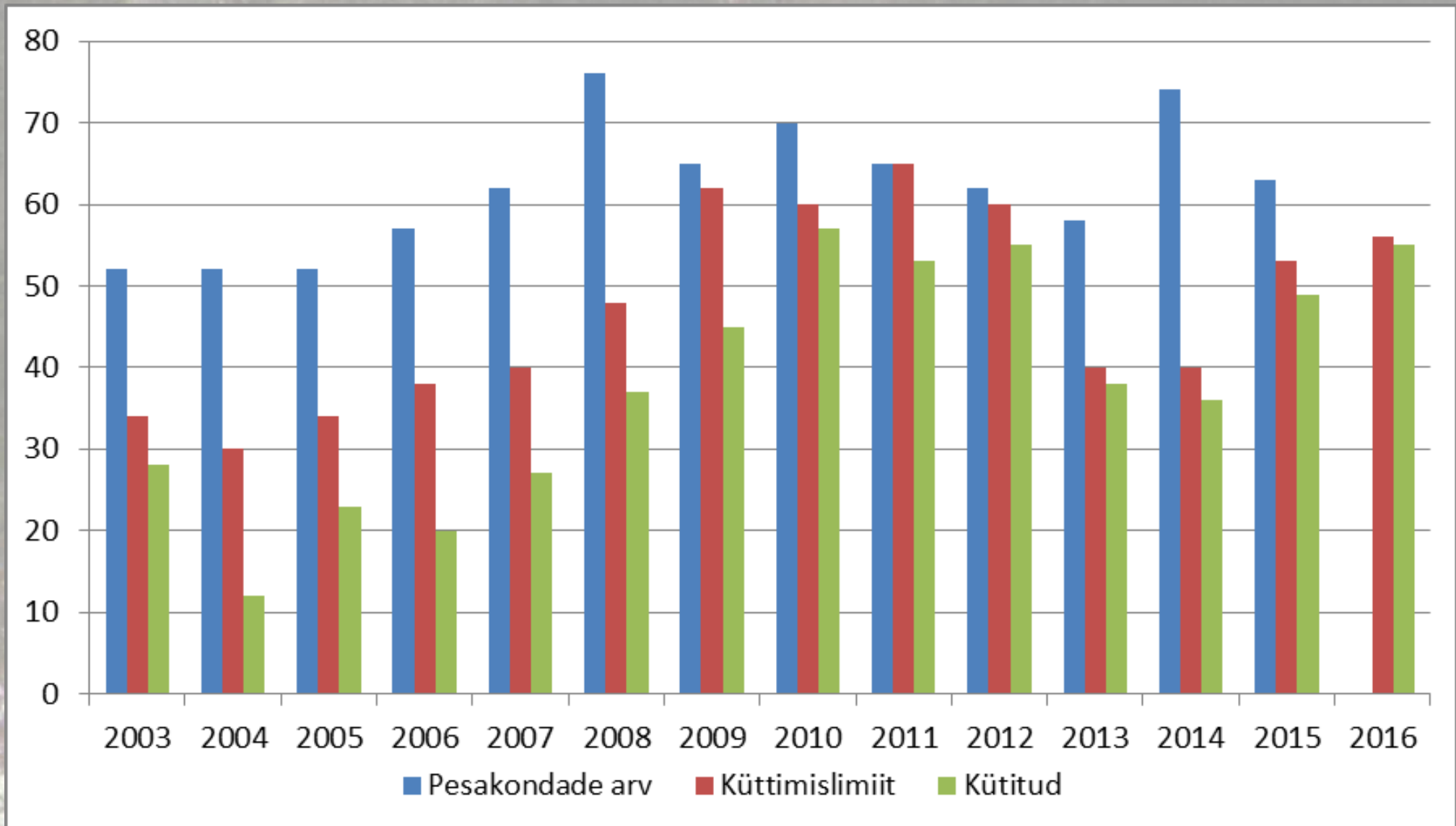


Hunting of roe deer (number of hunted individuals per 1000 ha) in hunting districts in 2015 and in previous hunting seasons.

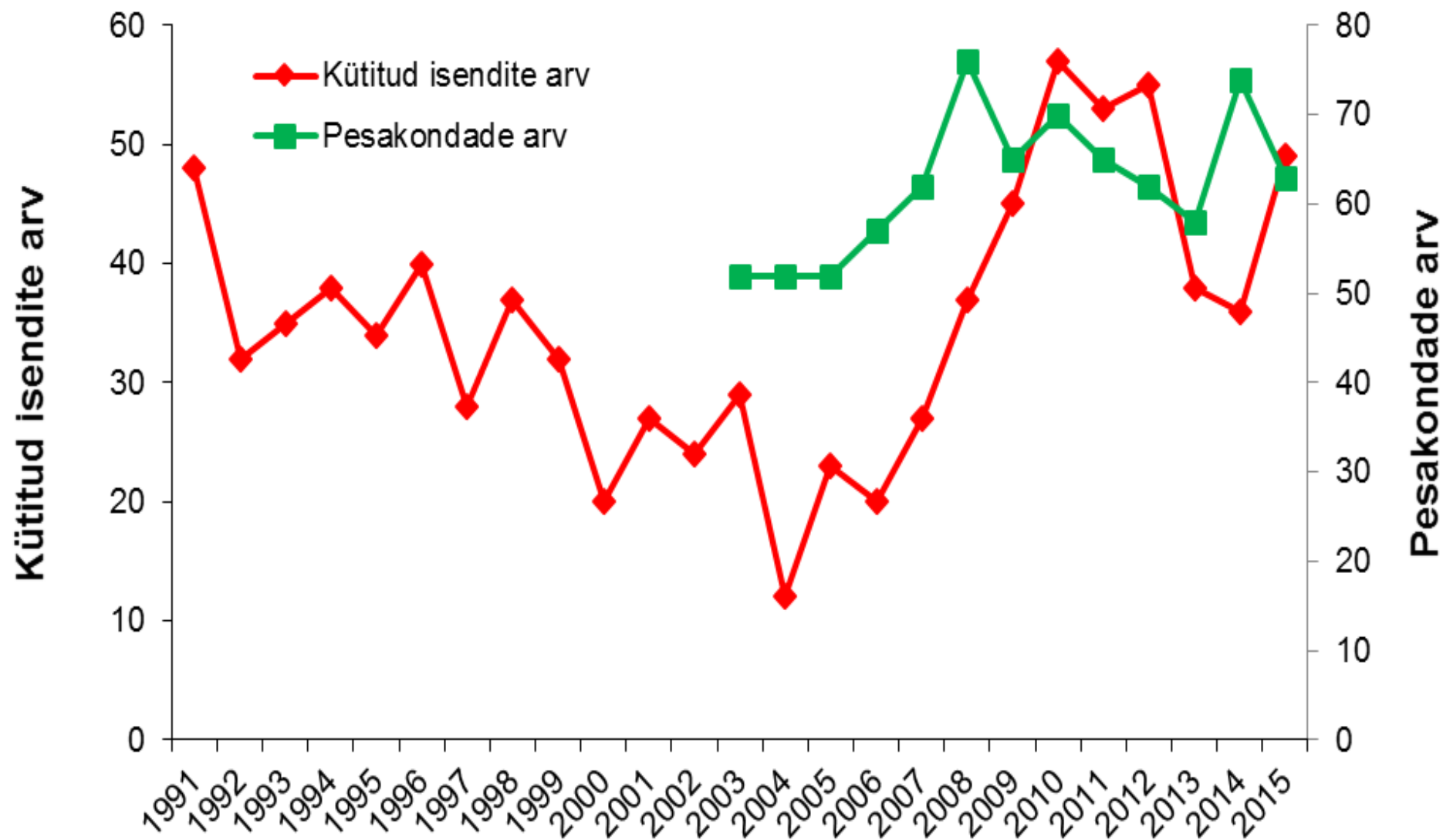


Hunting of wild boar (number of hunted individuals per 1000 ha) in hunting districts in 2015 and in previous hunting seasons.

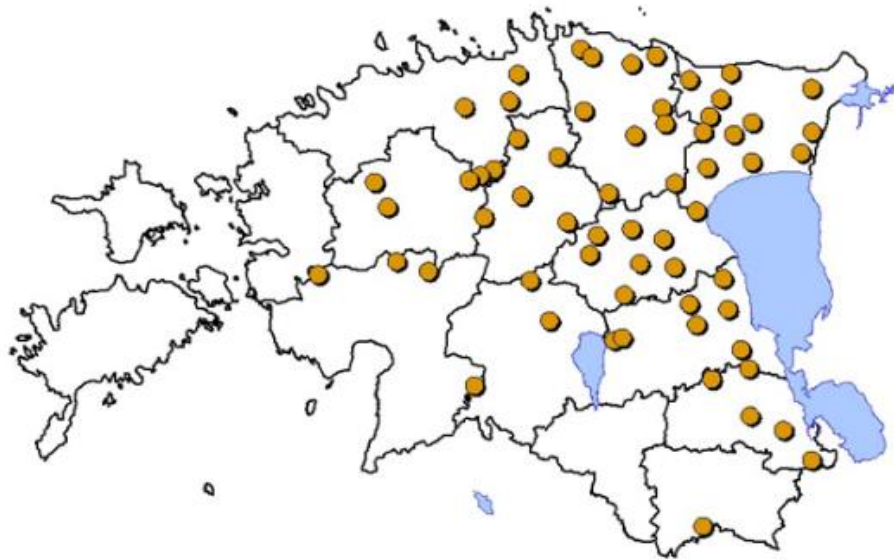
Brown bear



Number of bear females with cubs of-the-year (blue), hunting quota size (red) and number of hunted individuals (green) in 2003 - 2016.



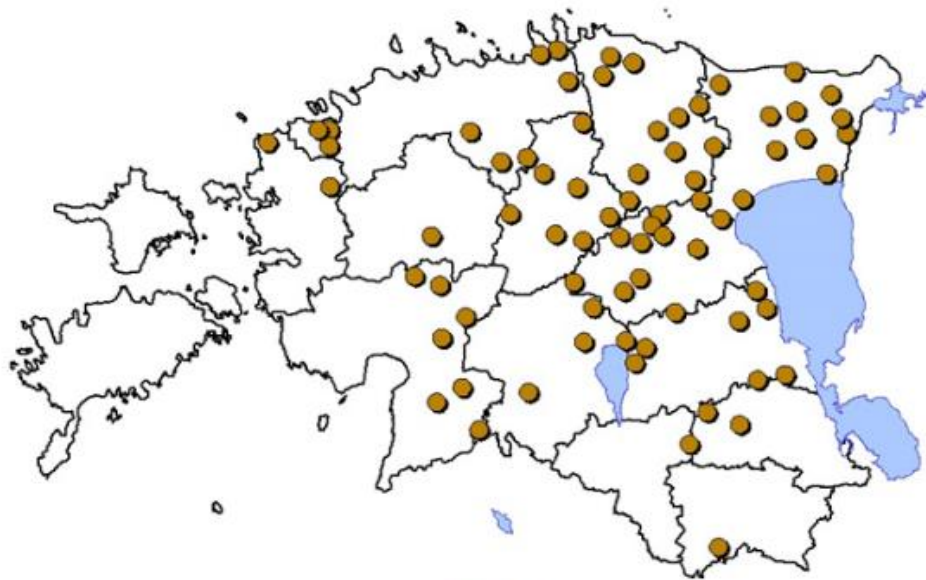
The number of brown bear hunted in 1991 – 2015 and number of females with cubs of the year in 2004 - 2015



2012



2013

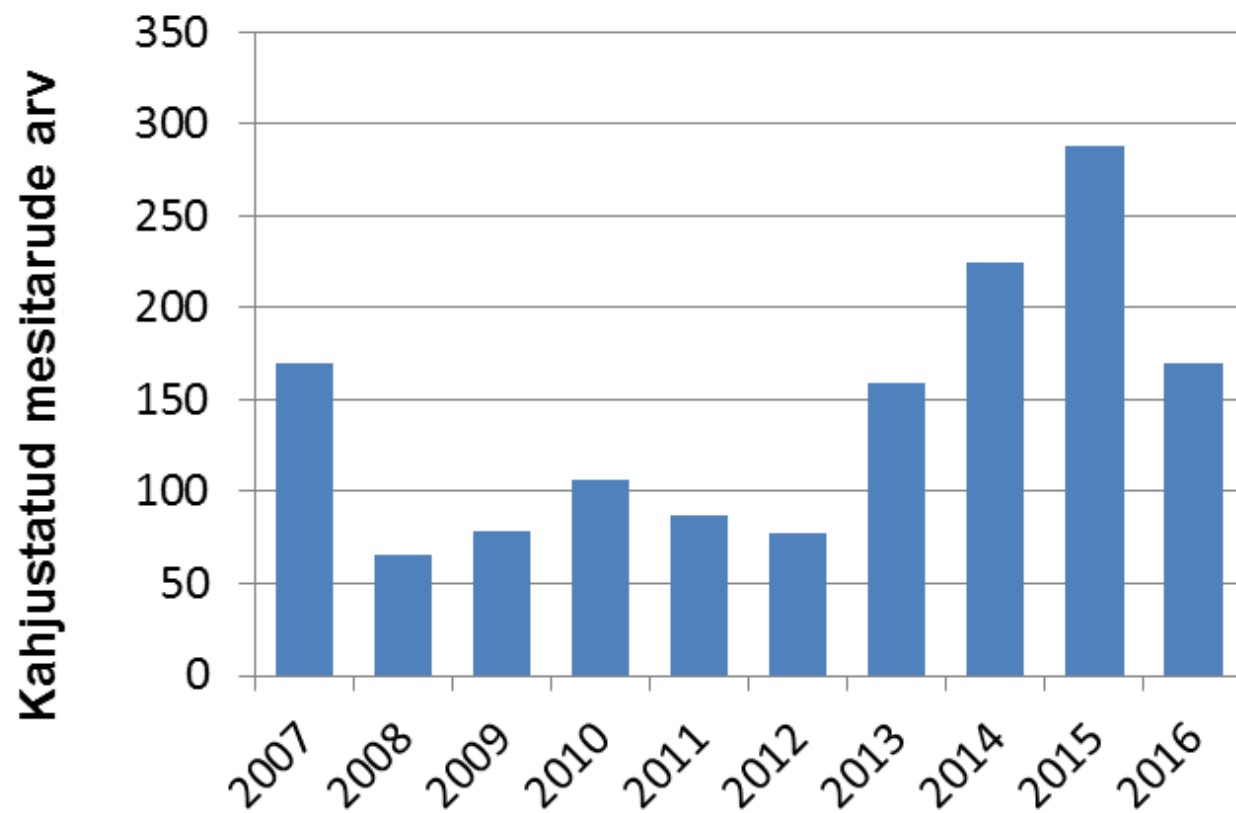


2014



2015

Females with cubs of-the-year



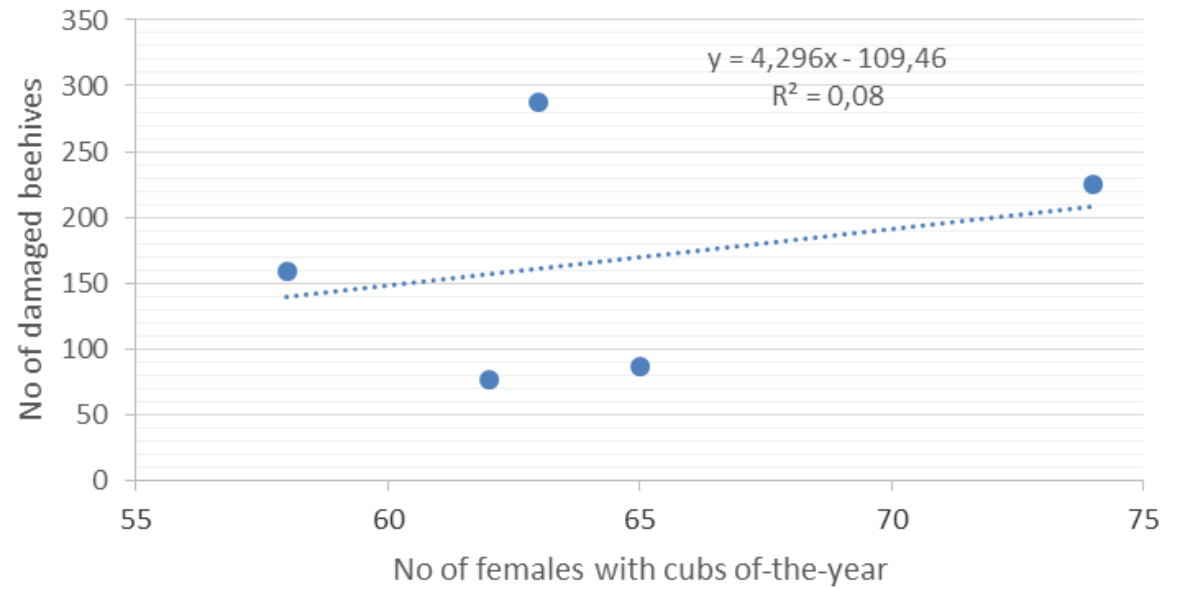
Number of beehives damaged by brown bear



2016 – preliminary result

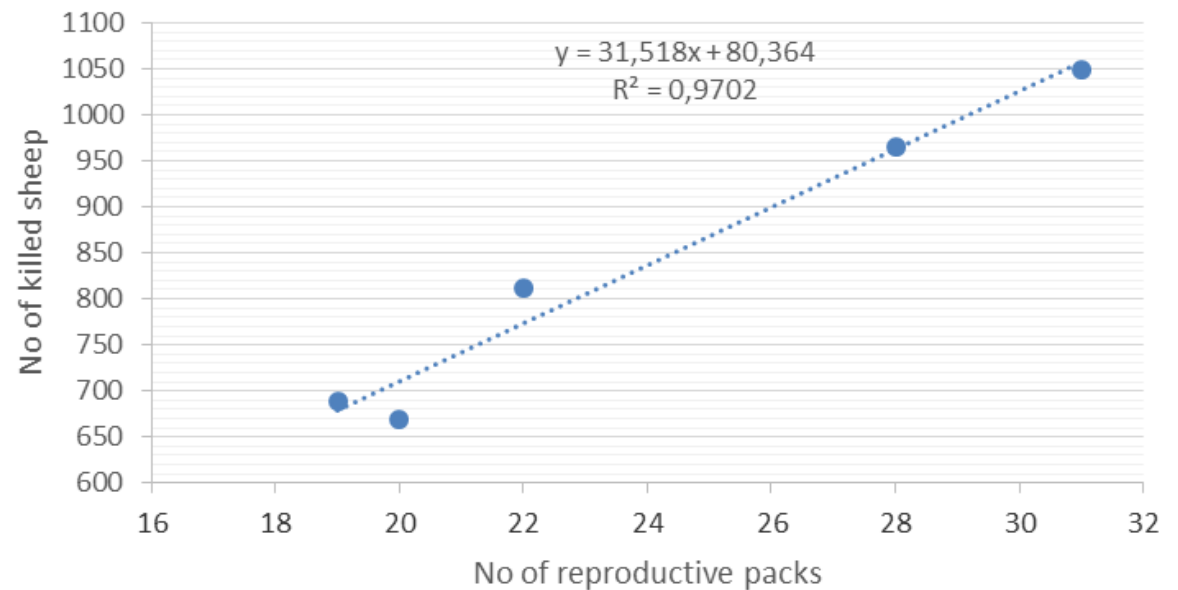
Bear

Correlation between bear numbers and damages



Wolf

Correlation between wolf numbers and damages





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Bears and boars: photos
from hunters trail cameras



Thank you for your attention!