

**Effects of Protection Measures for  
Lesser White-fronted Goose in Europe  
including European Russia**

## **Introduction**

To prepare protection of the Lesser White-fronted Goose (LWfG) *Anser erythropus*, best possible information about the species, its biology and current status, is of vital importance. Today, a wealth of such information is available. It is possible to calculate the future of the various European populations of the LWfG in dependence of planned protection measures and then choose optimal protection.

An easy to use computer model doing and presenting such calculations is available at <http://www.piskulkaconf.tk/>.

In this talk we

- 1) Explain what the model calculates**
- 2) Feed the model with two different action plans to see what kind of results we should expect implementing such plans.**
- 3) Estimate the reliability of the biological input data.**

## Inputs

When using the model, you put in your best available information for

### **Biological parameters for each of 6 interacting populations:**

- juvenil and adult mortality
- breeding success
- initial numbers of birds
- emigration between populations      etc.

Then you sput in a mix of protection efforts:

### **Numbers describing year by year protection efforts:**

- number of goslings caught in Russia for breeding in captivity
- numbers of goslings released to Nature in Sweden
- numbers of goslings released to Nature in Finland
- other efforts (?)

## Outputs

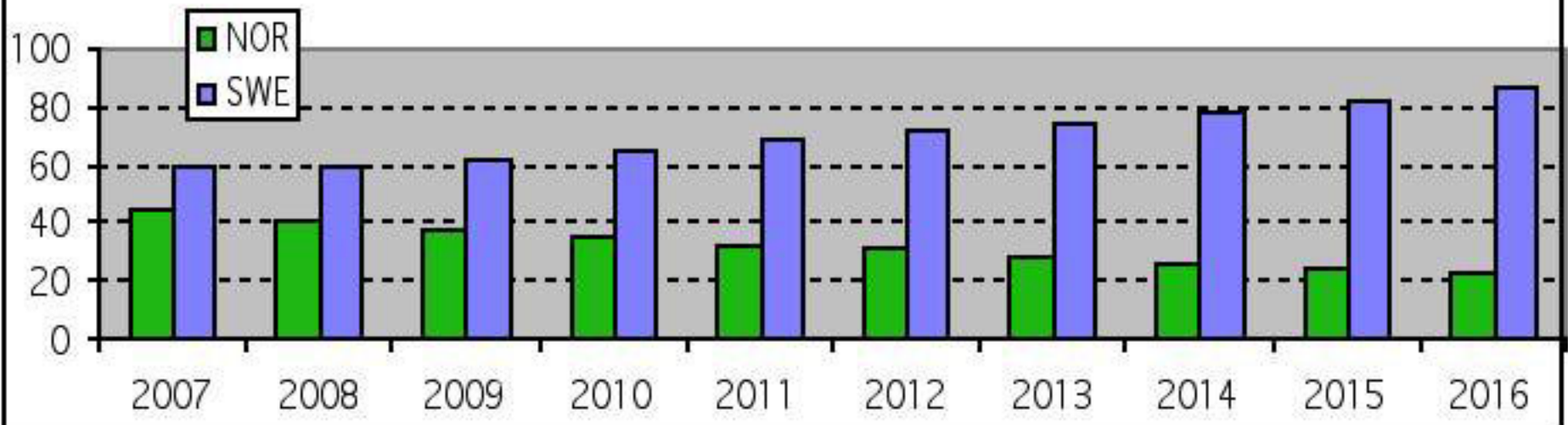
The six European populations in the model are (called)

- the Norwegian population (migration SE!)
- the (European) Russian population (migration SE!)
- the Swedish (reintroduced) population (migration SW!)
- the (future) Finnish population (migration SW!)
- the captive Swedish population
- the captive Finnish population

**The model forecasts the future for these populations in the input scenario and displays the results as charts**

# First scenario: If nothing new is done:

## Free Fennoscandian individuals

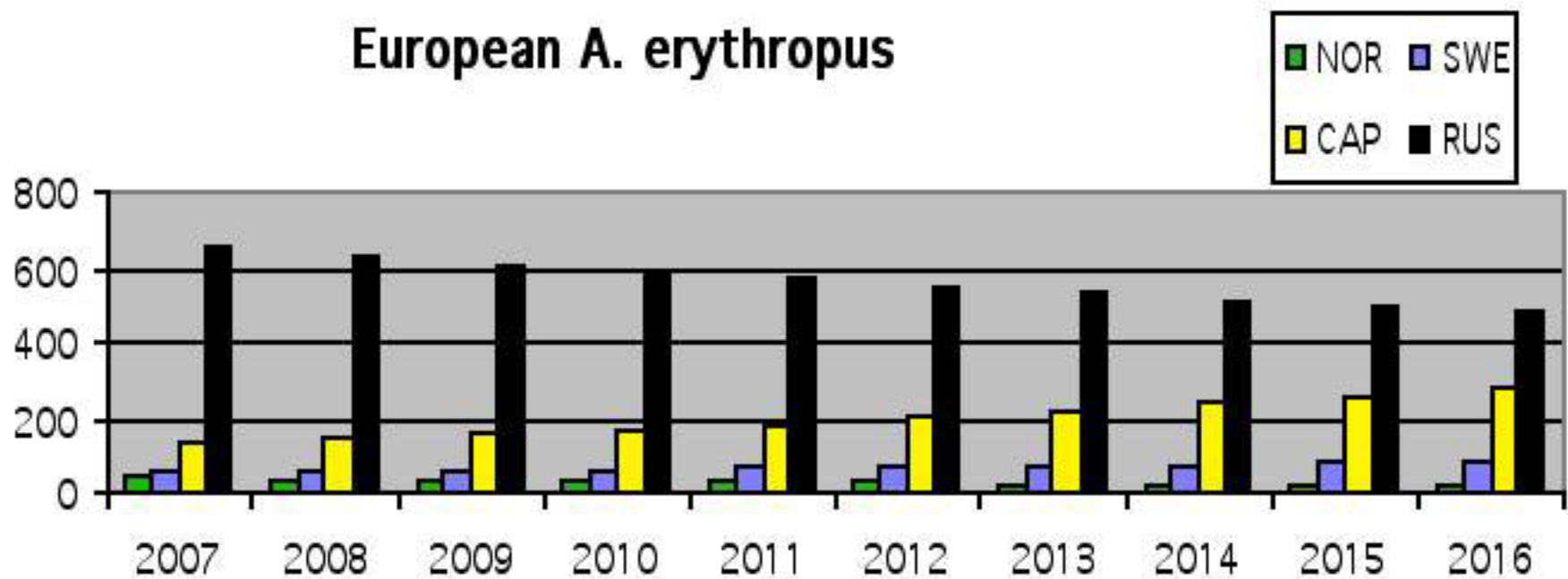


## Background data

	Norwegian (SE-migrating)	Swedish (SW migrating)
1:st year mortality	78 %	25 %
2:nd year mortality	16 %	20 %
adult mortality	16 %	10 %
breeding success / ad ind	0,5	0,3
GROWTH RATE	-5 %	+5 %

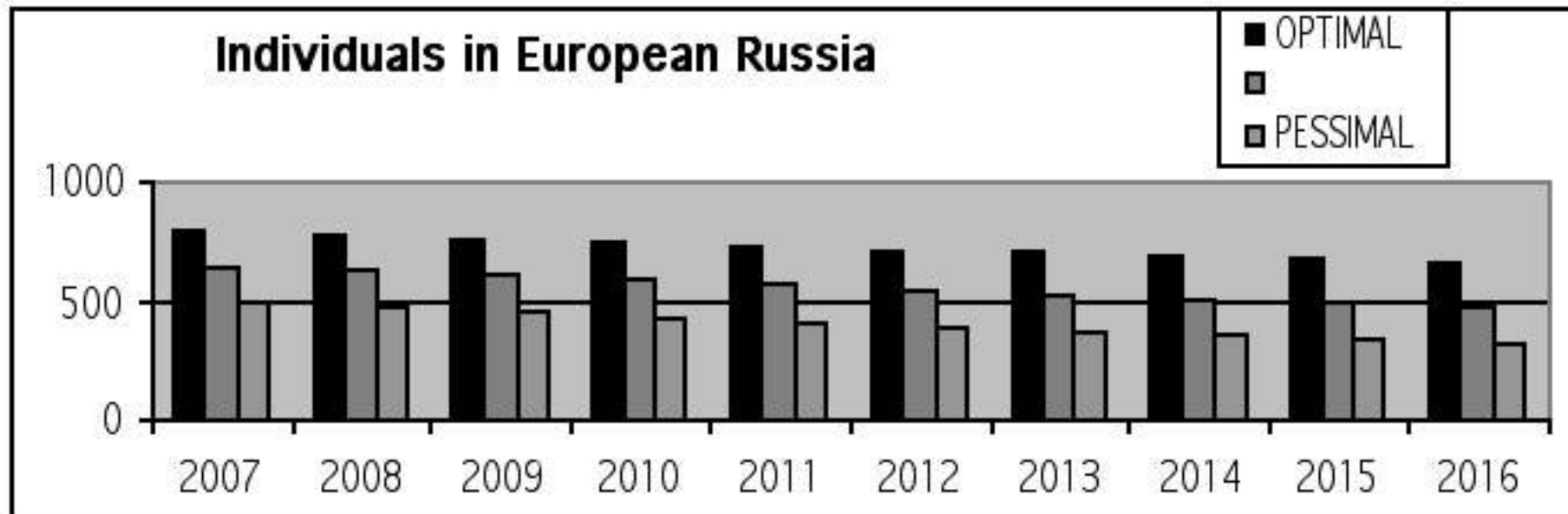
First scenario again. Chart for all free populations:

### European *A. erythropus*



	Russian (European)	Captive (Theoretical)
1:st year mortality	76 %	20 %
2:nd year mortality	13 %	12%
adult mortality	16 %	10 %
breeding success / ad ind	0,5	0,35
GROWTH RATE	-3 %	+ 8%

# Do we know what is going on Russia?



## This chart builds on the data:

**500 to 800 spring individuals in European Russia** (Morozov and Syroechkowski 2002)

**240 breeding pairs in Europe** (BirdLife 2004)

At least 20 per cent loss for Europe(an Russia) 1990 to 2000 ( **annual 2 %**) (BirdLife 2004)

20-29 per cent loss for European Russia 1995 to 2000 ( **annual 4-6 %**) (BirdLife 2004)

30-49 per cent loss for European Russia 1995 to 2005 ( **annual 3-5 %**) (IUCN 2004)

The following slides show the effects of two different protection plans



**For comparison, we think of the one plan to be carried out in Sweden, the other in Finland. Results of each are are plotted in the same charts.**

### **The plans:**

#### **Importing young LWfG from Russia to captivity**

How many each year?      **5** to Sweden in 2008-2025  
   **none** to Finland (Use current stock!)

#### **Initial stock in captivity**

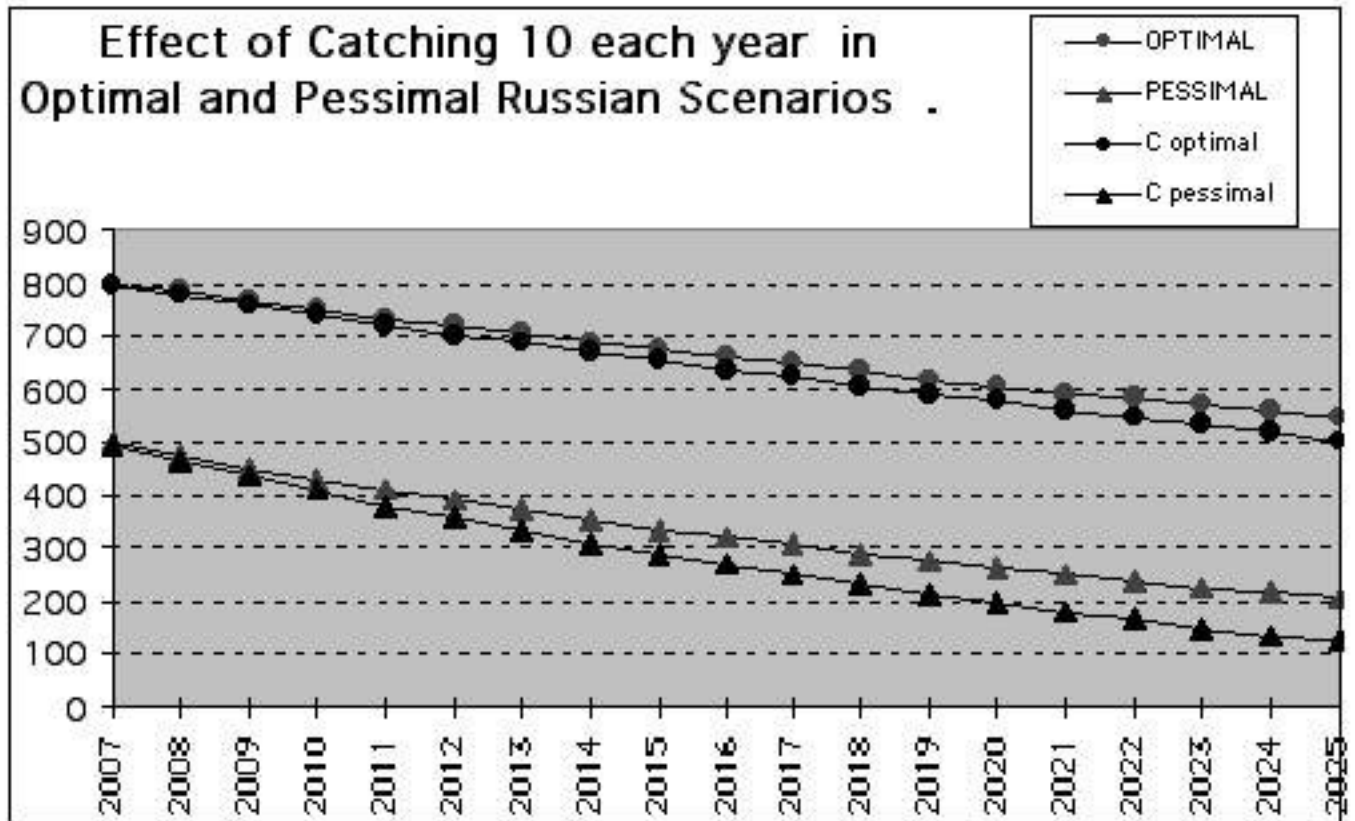
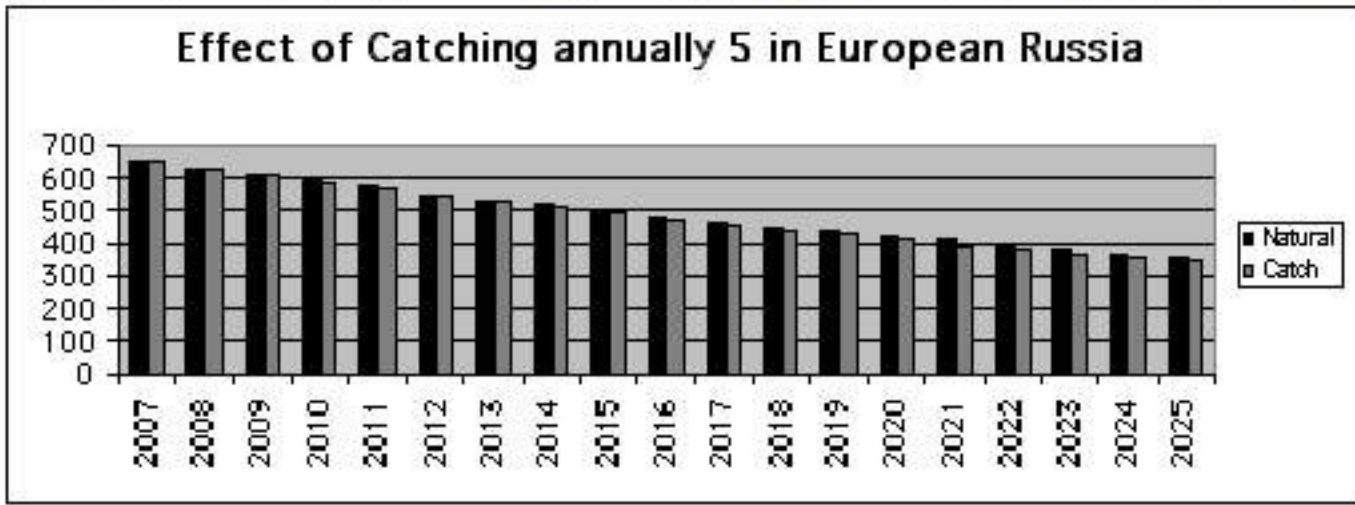
How many to begin with?    **8** in Sweden (Imported Russian)  
   **70** in Finland (Selected captive)

#### **Releasing young LWfG to freedom**

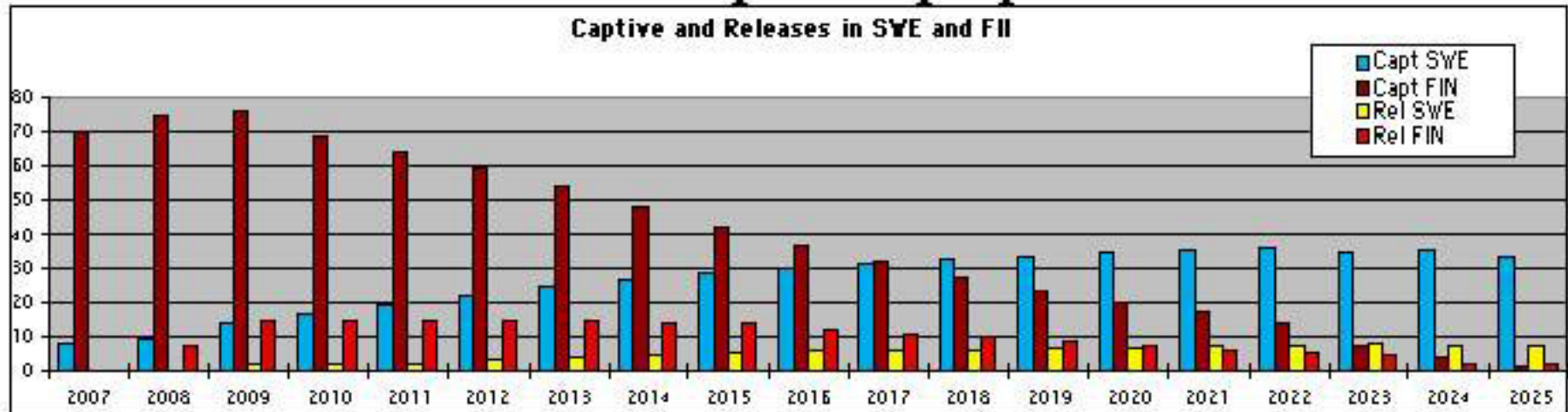
How many each year?      **15** in Sweden 2008-2025  
   **15** in Finland 2008-2025 (the same!)

**but only, if goslings available in captivity (!)**

# How much will catching speed up extinction in Russia?



# Future of captive populations



## At start in 2007:

8 in Sweden "new birds scenario",  
70 in Finland "current birds scenario"

## From Russia each year

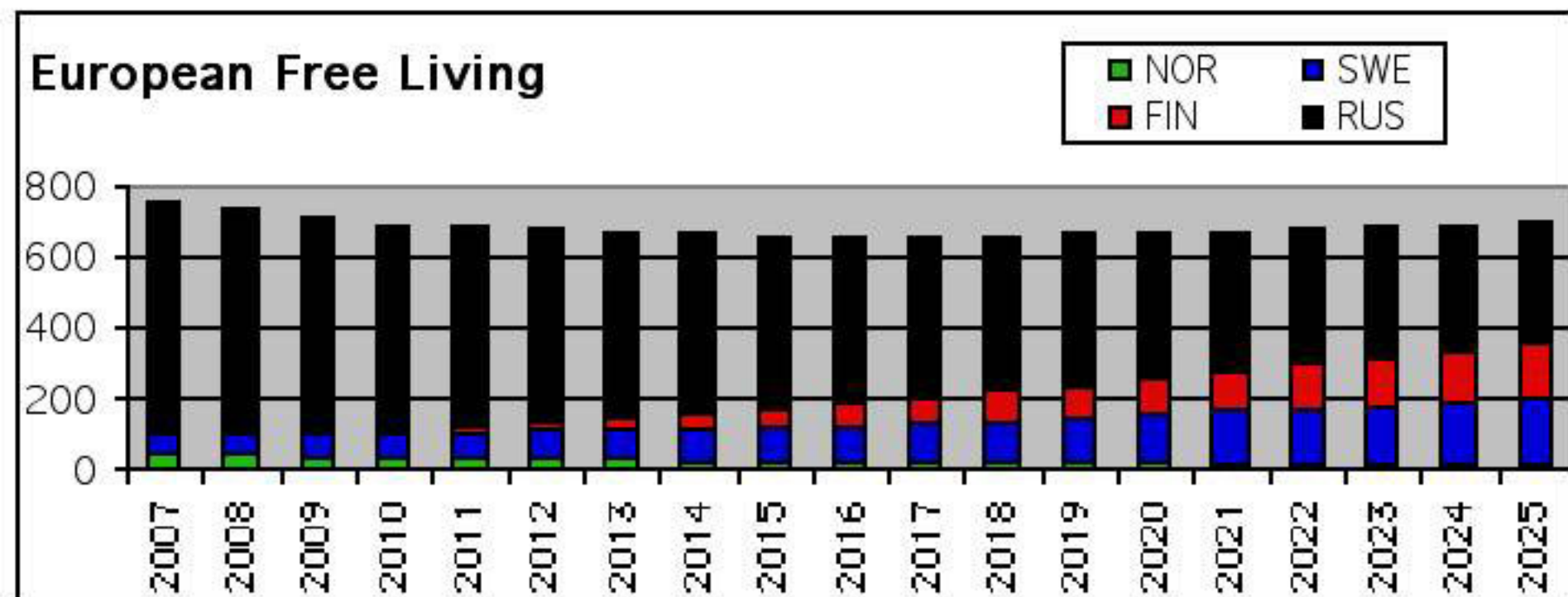
5 to Sweden "constant import" (total 85)  
0 to Finland "no import" (total 0)

## To Freedom each year

"almost all goslings are released" (maximally 15 S + 15 F)

**Releases total: 252**

# Effect on free populations



## Observations:

Russian birds should better be caught soon - or never.

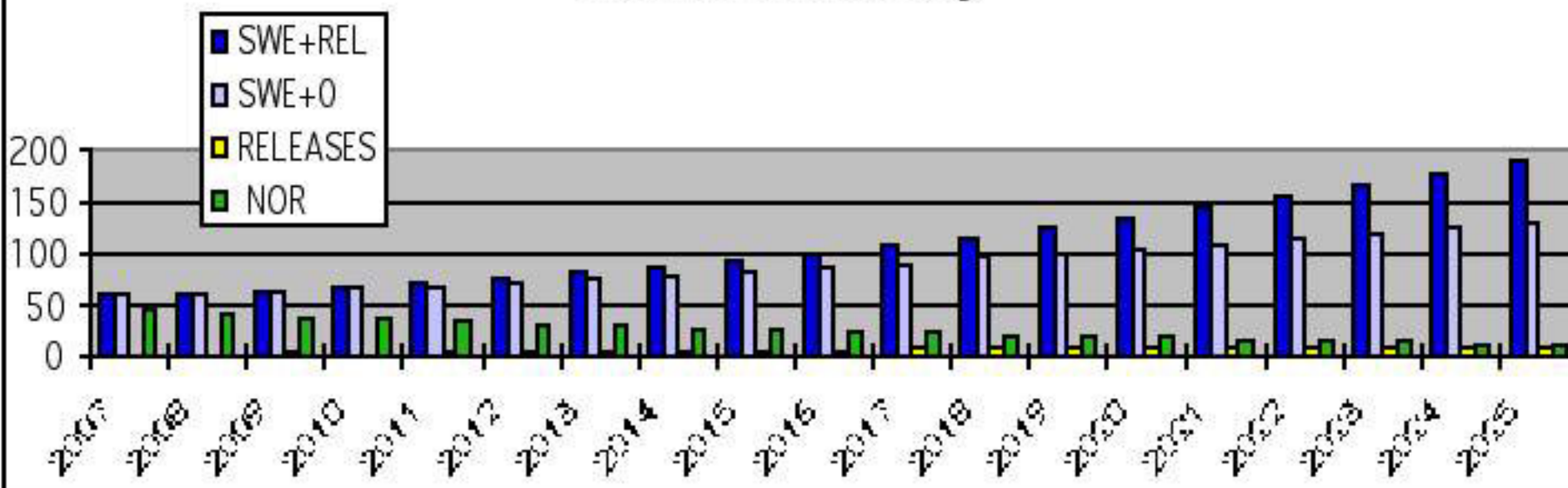
The trend-turn in 2014 is mainly due to "Finnish" restocking based on the current captive population.

In "Sweden", the current free population is the basic growth ground.

The next slide shows this in detail!

# "Swedish" restocking with new (Russian) birds

Sweden and Norway



## The plan labeled "Swedish" was:

Import from Russia : 5/ year

Release plan: 15/year

Possible releases: will be: (see separate chart ) (total 74, average 3)

**Observation:** Releases in this plan do not contribute much to growth of reintroduced population.

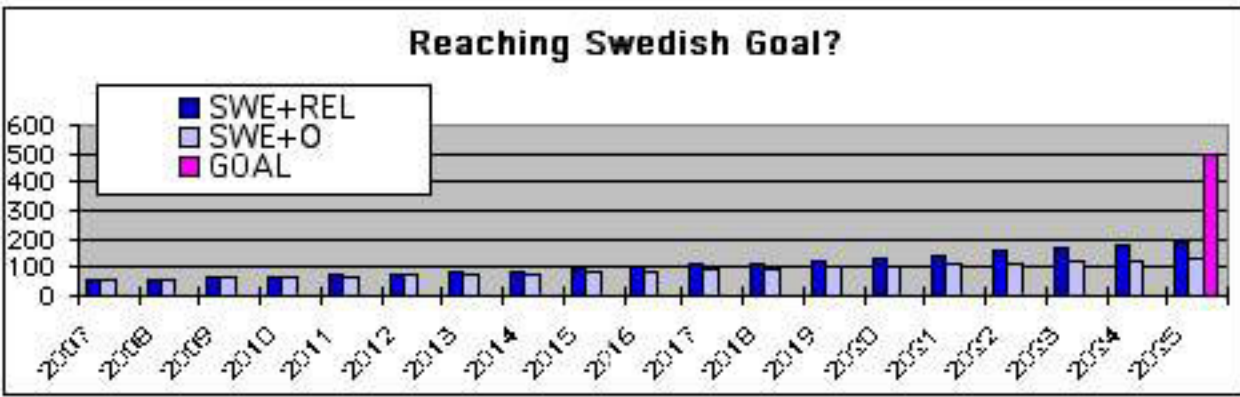
## Reasons for failure of the plan labeled "Swedish":

a) No initial captive stock

b) Too early releases: No population growth in captivity

# Comparison of the plans labeled "Swedish" and "Finnish"

**"Swedish" scenario:**  
 Initially 8  
 Import 5/year  
 all goslings released  
 Goal 200 pairs



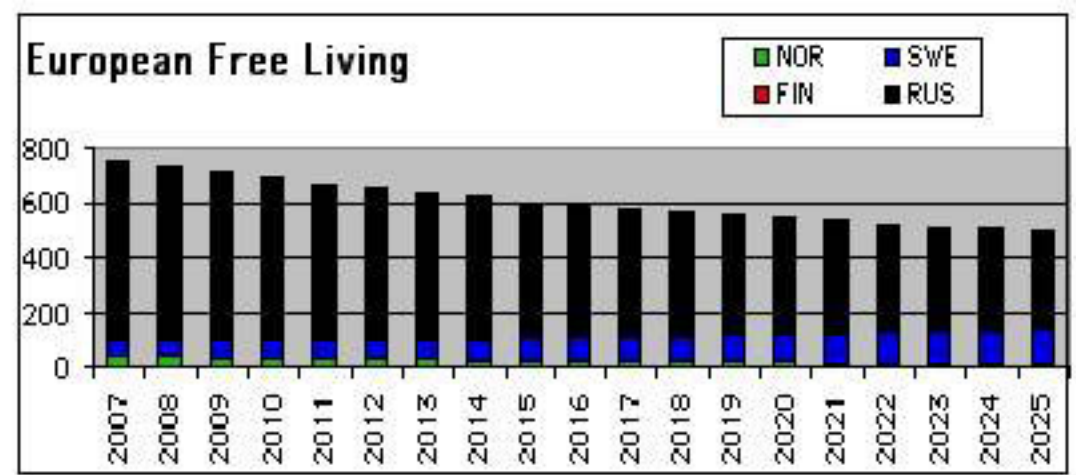
The pale blue pillars represent growth of current Swedish population without further restocking. The dark blue pillars represent the planned scenario labeled "Swedish".

**"Finnish" scenario:**  
 Initially 70  
 No import  
 max 15 releases/year  
 Goal 100 pairs

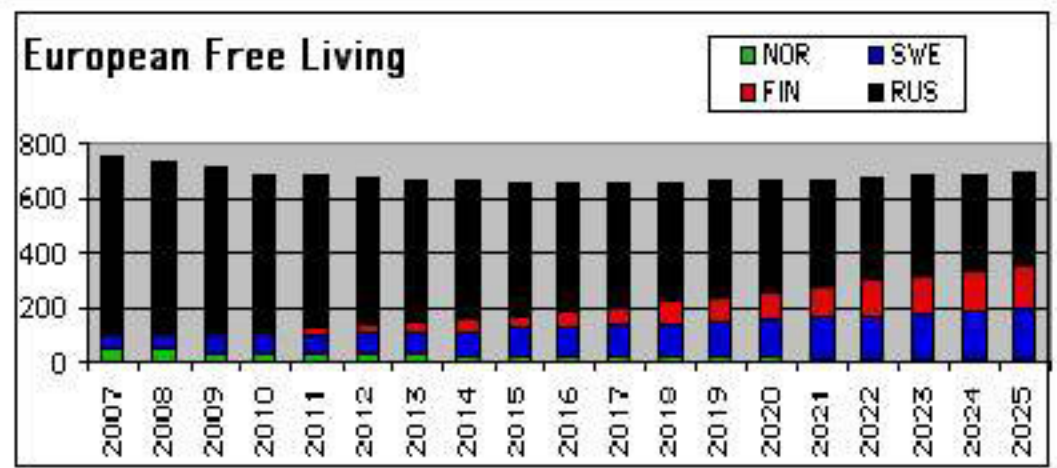


# Other scenarios

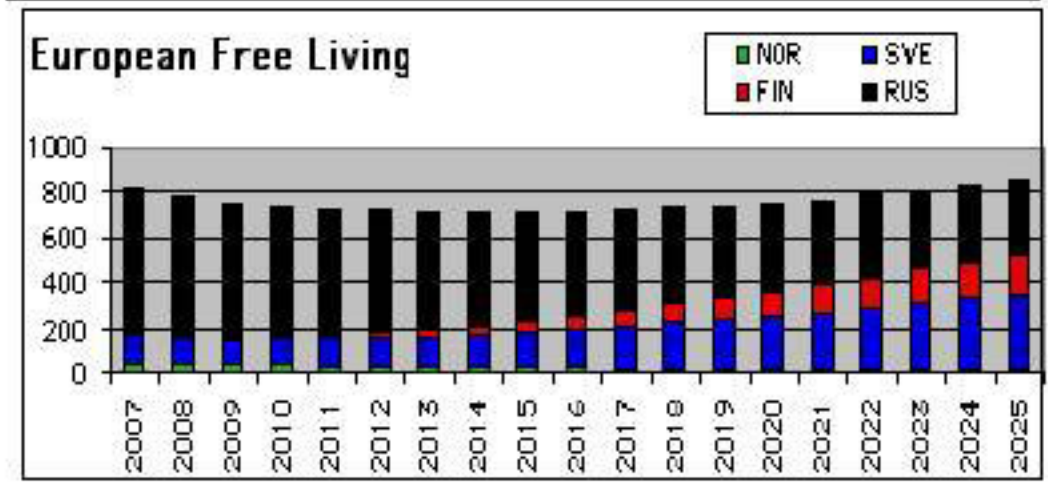
**"No restocking at all" will result in a total European LWfG population of 500 individuals in 2025**



**The model plans "Sweden" and "Finland" described above will result in a total European LWfG population of 750 individuals in 2025**



**Modifying the plan by importing 6/y to Finland will result in 830**



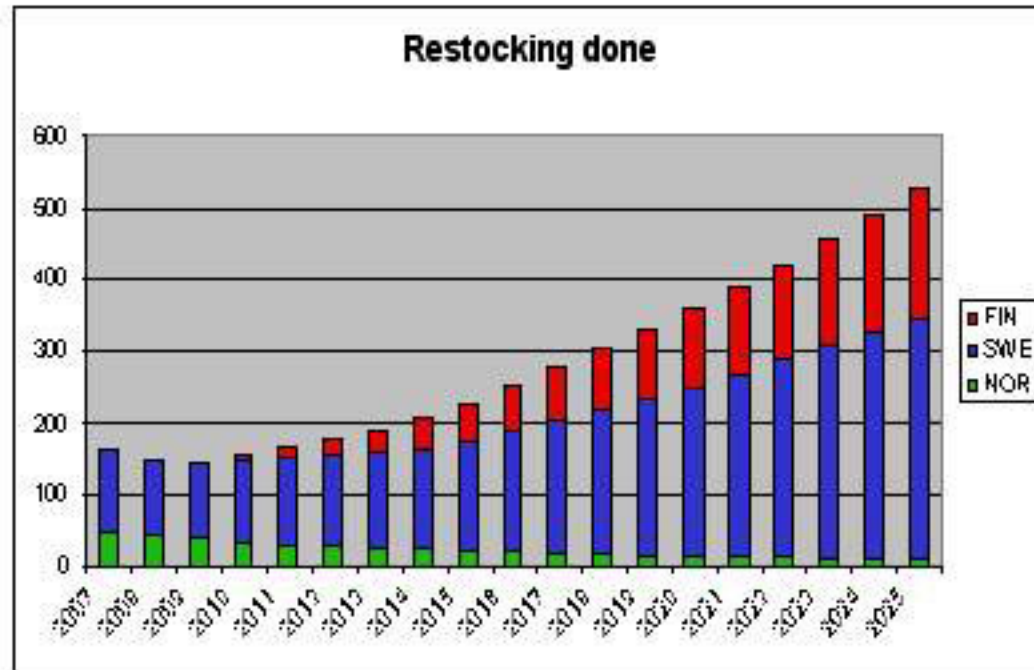
**The following slide will give another view of the comparison between doing nothing and adapting the "optimized" third plan above. This time we plot the effect for the EU only, neglecting Russia.**



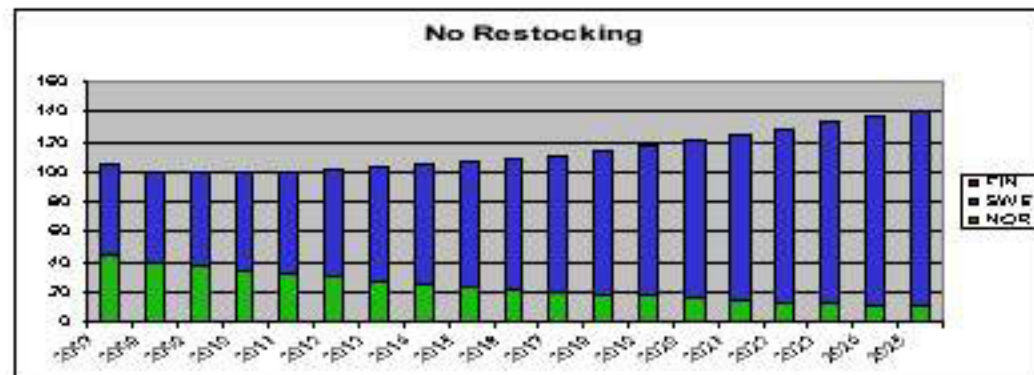
Restocking in  
the EU

or

not



500



120

# Conclusions

## **Without restocking**

- the Norwegian population will die out. Another test run shows: Adult mortality must be halved (!) to stop decline in Norway.
- the (European) Russian population will lose some 30 %
- the Swedish (reintroduced) population will gain some 30 %
- no Finnish population will exist

**The plans essentially account to transporting LWfG from one place in Europe to another.** Positive effects result from keeping them where they multiply fastest.

Captivity is such a place, Freedom in Sweden another - not as fast, but more natural and risk free (and cost free).

## **Russian caught "fresh" captive birds**

- Will easily harm the Russian free population as seen in the charts
- Will only contribute to a minor increase in the EU population

## **70 founder birds**

- Will not even be sufficiently many to reach for a modest "Finnish" goal of 100 breeding pairs in 2025 - but close to that.
- Are about half of the available total captive ("clean") population in Europe

## If questions:

- The biological data used to produce these slides is adapted to the best knowledge available.
- A full account on this as well as on the mathematics is given in the background document available on the same web site where you find the model itself.
- The effects of **other protection measures** besides restocking have been tested for more than two decades. No positive effects have been observed.



Thank You for Your Attention!

