

The distribution changes and threats of butterflies in Estonia

Jaan Luig, Ave Liivamägi, Kadri Kask, Valdo Kuusemets
Estonian University of Life Sciences
Ave.liivamagi@emu.ee

- The list of Estonian Lepidoptera consists approx. 2400 species
 - some species are not constant (vagrants or occasional visitors)
 - some species have already disappeared
- There are 116 butterfly species in Estonia
 - 99 species are native (local)
 - 7 butterfly species are protected by EU Habitat Directive Natura 2000
 - additionally, 1 species (*Erebia embla*) is under legal protection
 - 1 special conservation area designated for the conservation of butterflies

General European trend – many butterfly species are endangered and have been decreasing their abundance and distribution area

Generally, the state of the Estonia's butterfly species is satisfactory or even good

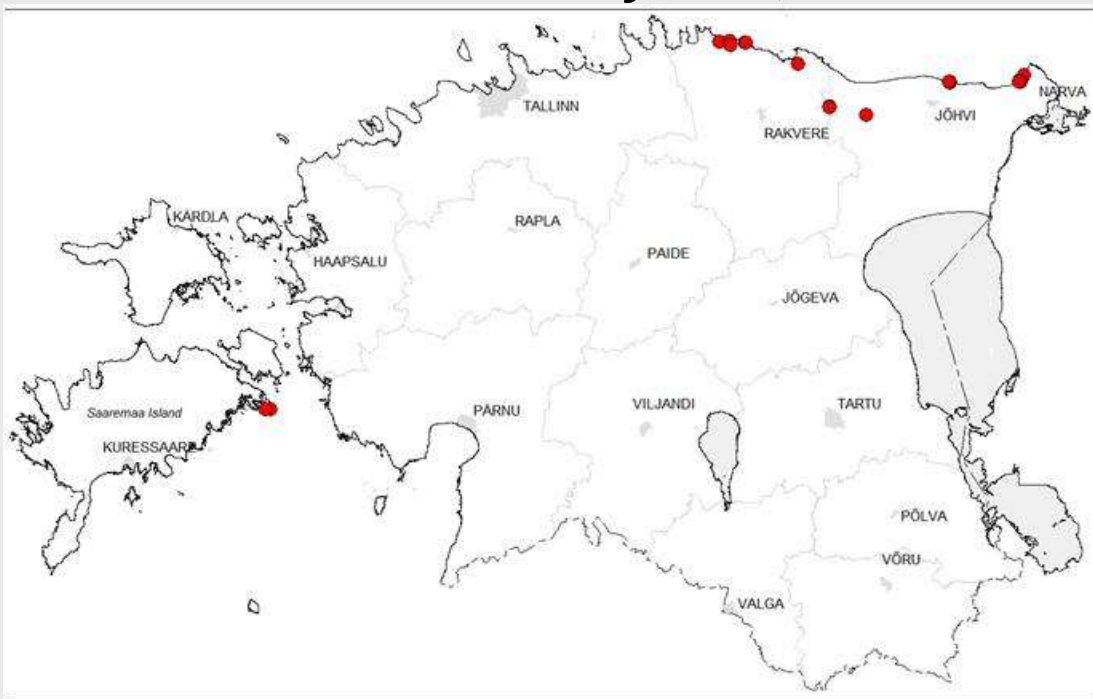
Data of the butterfly monitoring in Estonia (2004-2011) shows that butterfly abundance and richness is increasing

Several butterfly species have increased their distribution area and abundance

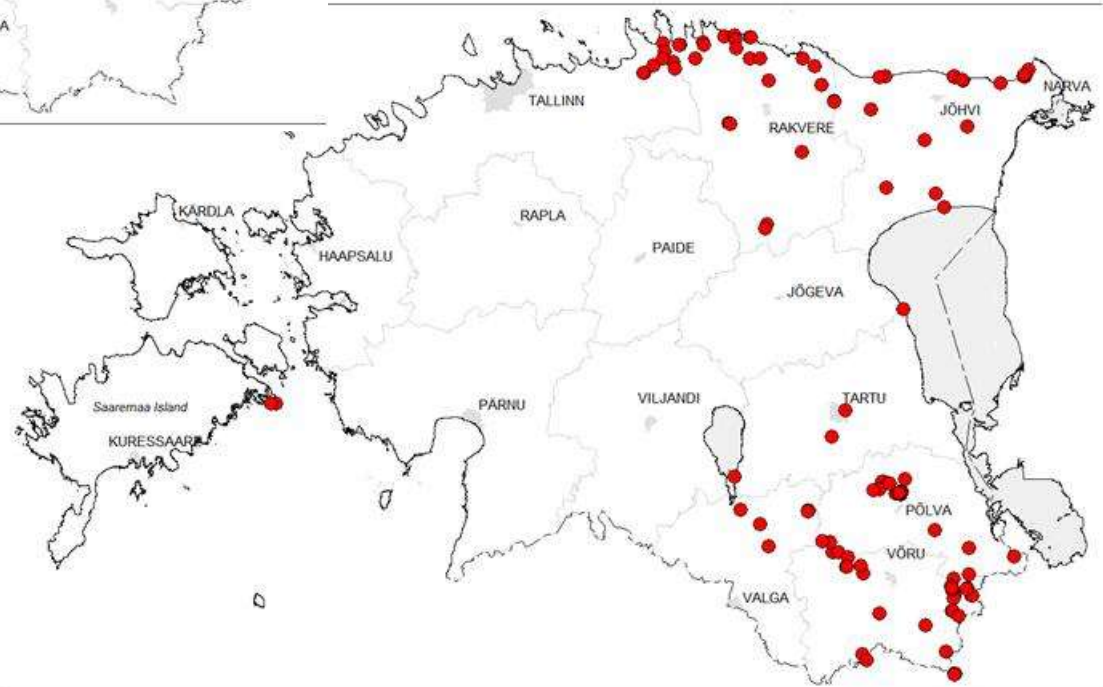
For instance 4 EU Habitat Directive species that are found in Estonia:

- *Parnassius mnemosyne*
- *Lopinga achine*
- *Lycaena dispar*
- *Euphydras maturna*

Parnassius mnemosyne (Linnaeus, 1758)

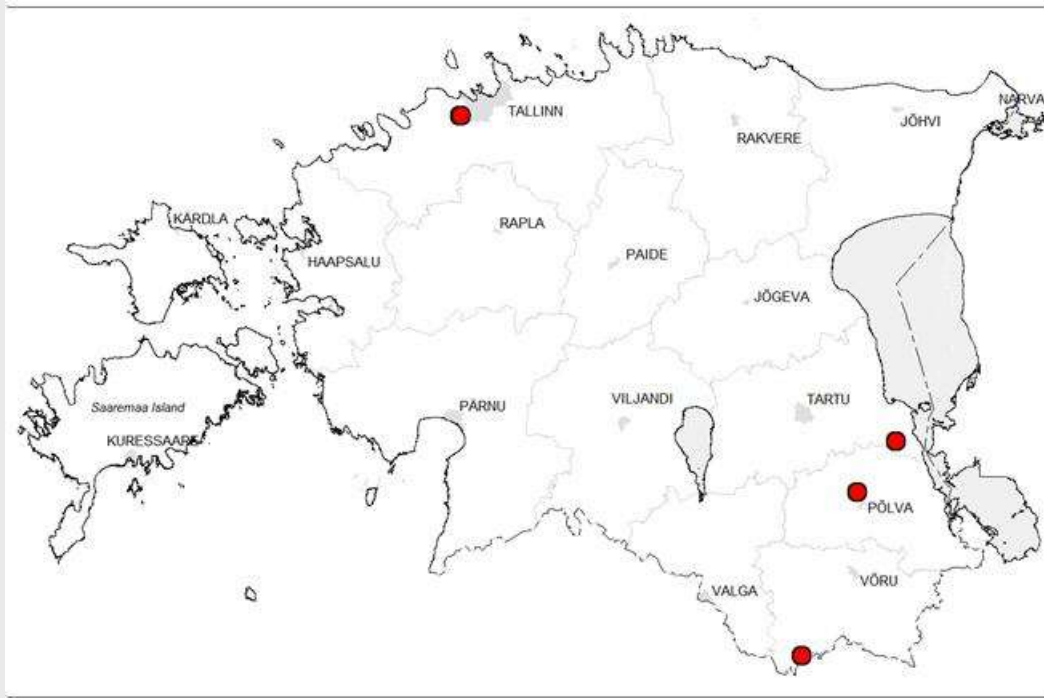


Findings of *P. mnemosyne* in
1878 – 1979 in Estonia

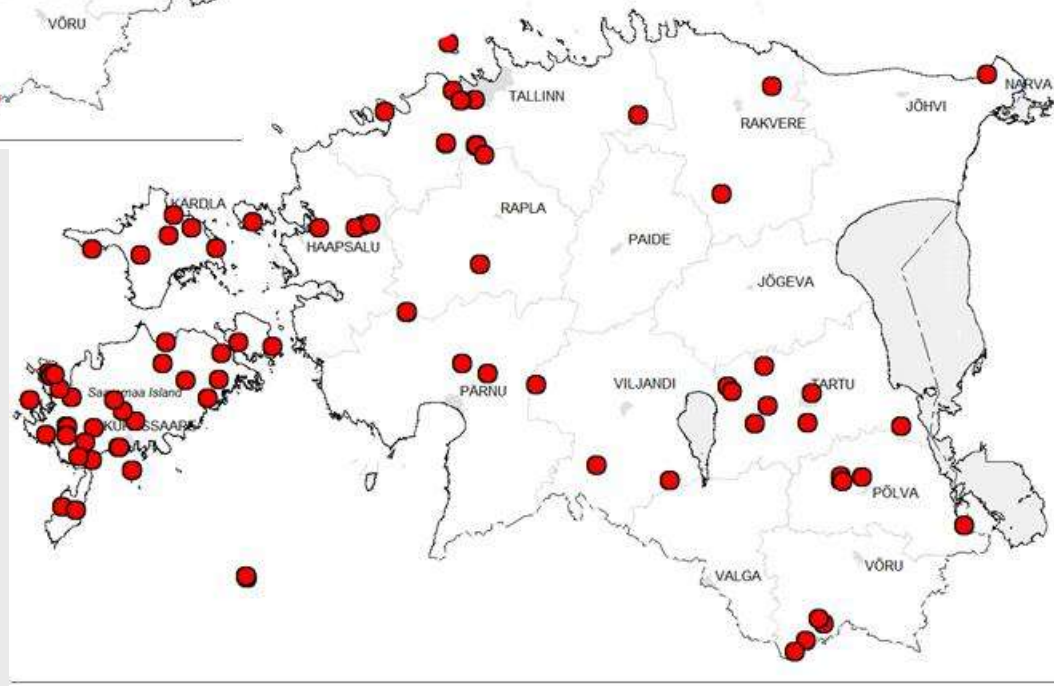


Findings of *P. mnemosyne* in 1980 – 2010 in Estonia

Lopinga achine (Scopoli, 1758)

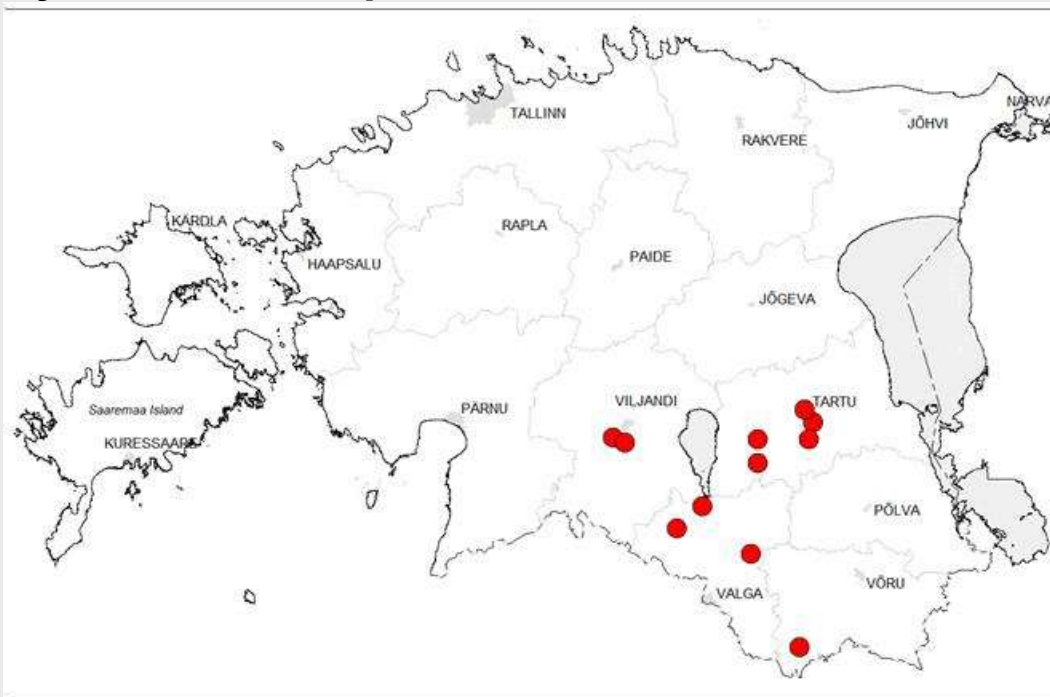


Findings of *L. achine* in 1947-1989
in Estonia

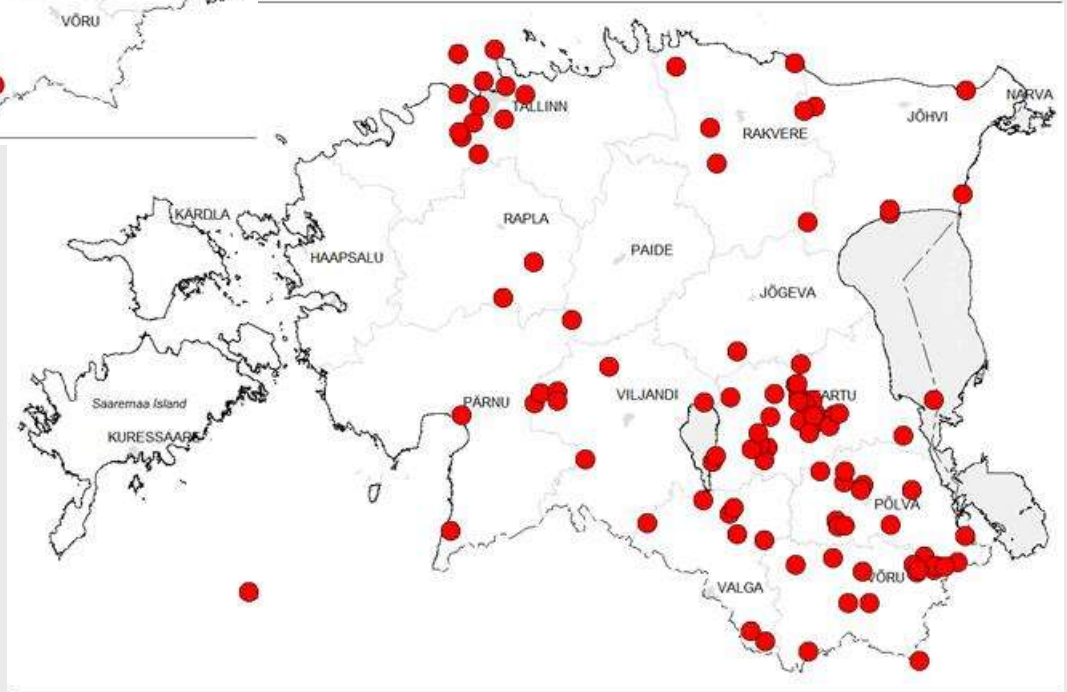


Findings of *L. achine* in 1990-2008 in Estonia

Lycaena dispar (Haworth, 1802)

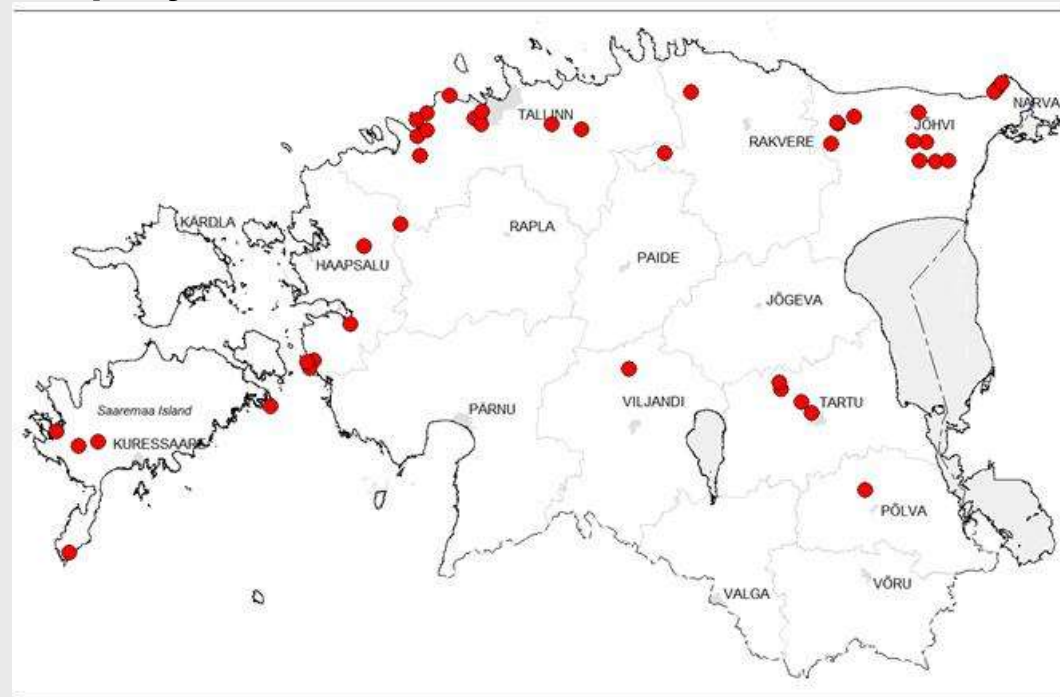


Findings of *L. dispar* until 1969 in Estonia

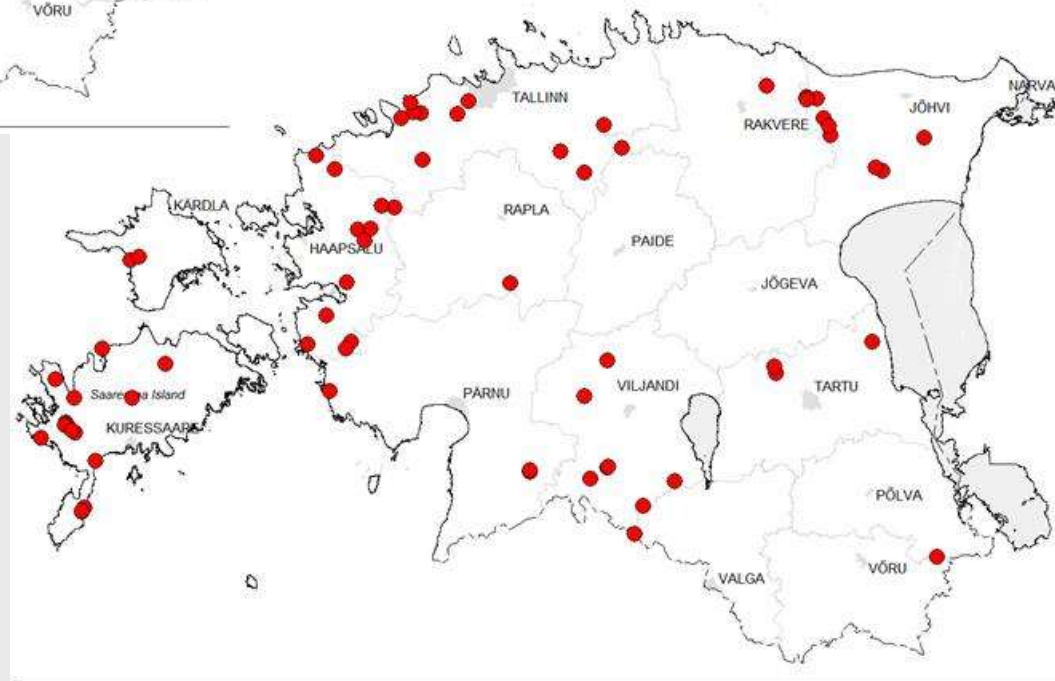


Findings of *L. dispar* in 1970 – 2009 in Estonia

Euphydras maturna (Linnaeus, 1758)



Findings of *E. maturna* until 1970 in Estonia



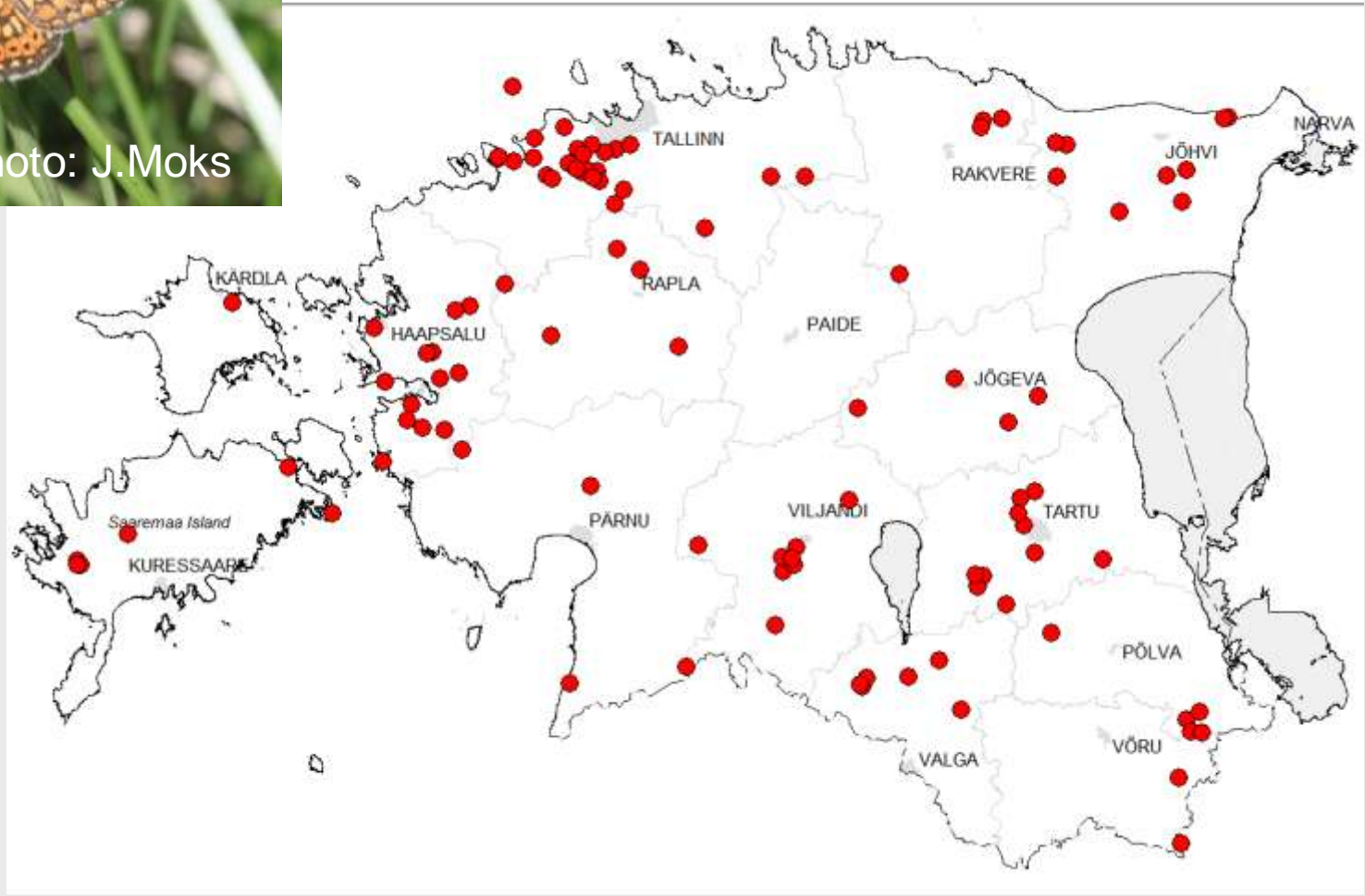
Findings of *E. maturna* in 1971 – 2009 in Estonia

Maculinea arion (Linnaeus, 1758)



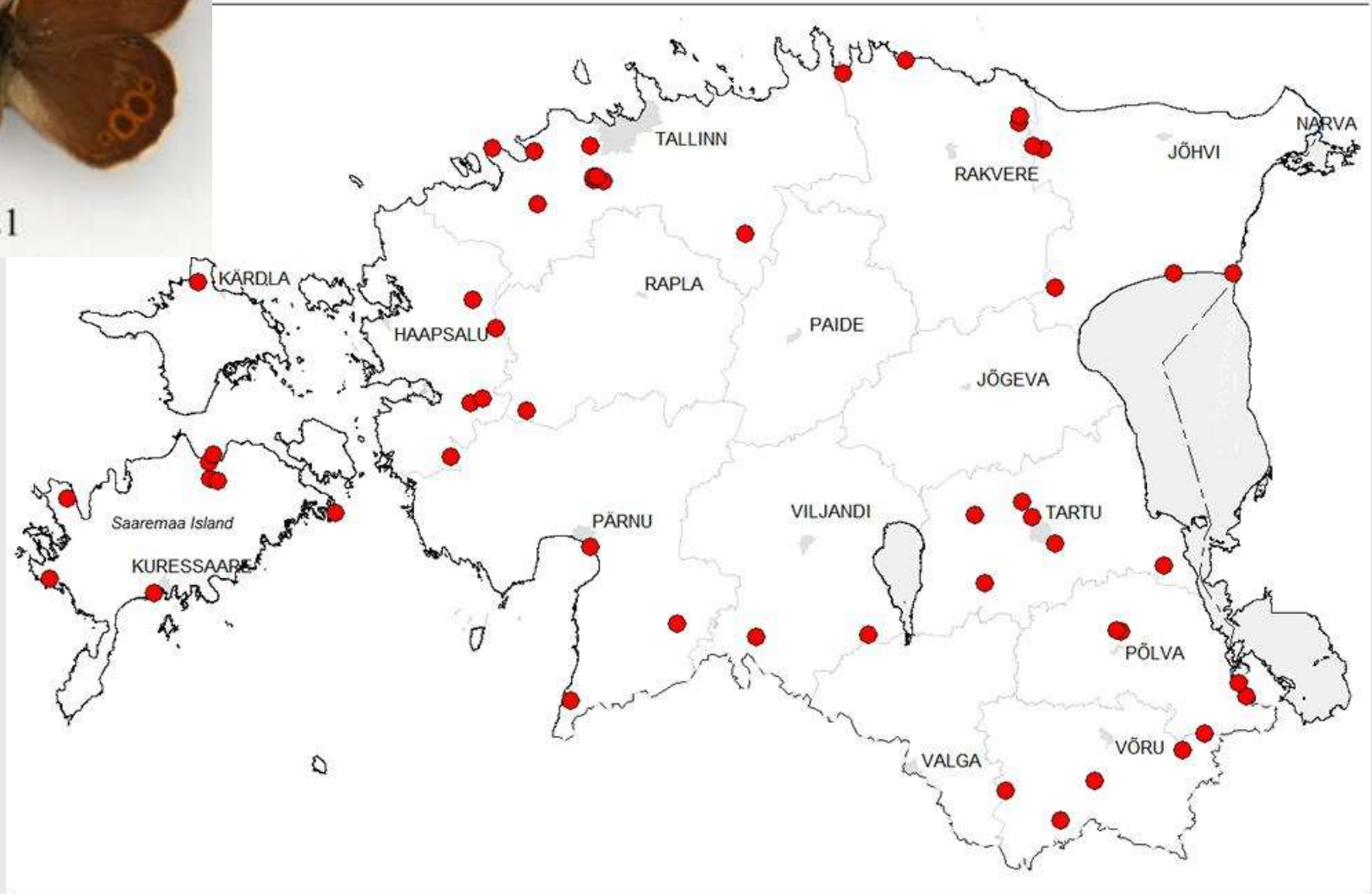
Findings of *M. arion* in 1929 – 2008 in Estonia

Euphydras aurinia (Rottemburg, 1775)



Findings of *E. aurinia* in 1850 – 2009 in Estonia

Coenonympha hero (Linnaeus, 1761)



Findings of *C. hero* in 1984 – 2003 in Estonia

In the period 2000–2005 new findings of 18 moth, Microlepidoptera species in Estonia

In the period 2008-2011 new findings of 34 Microlepidoptera and 7 Macrolepidoptera species in Estonia

Increase in number of individuals of

Apatura ilia

Apatura iris



Limenitis populi,
Limenitis camilla



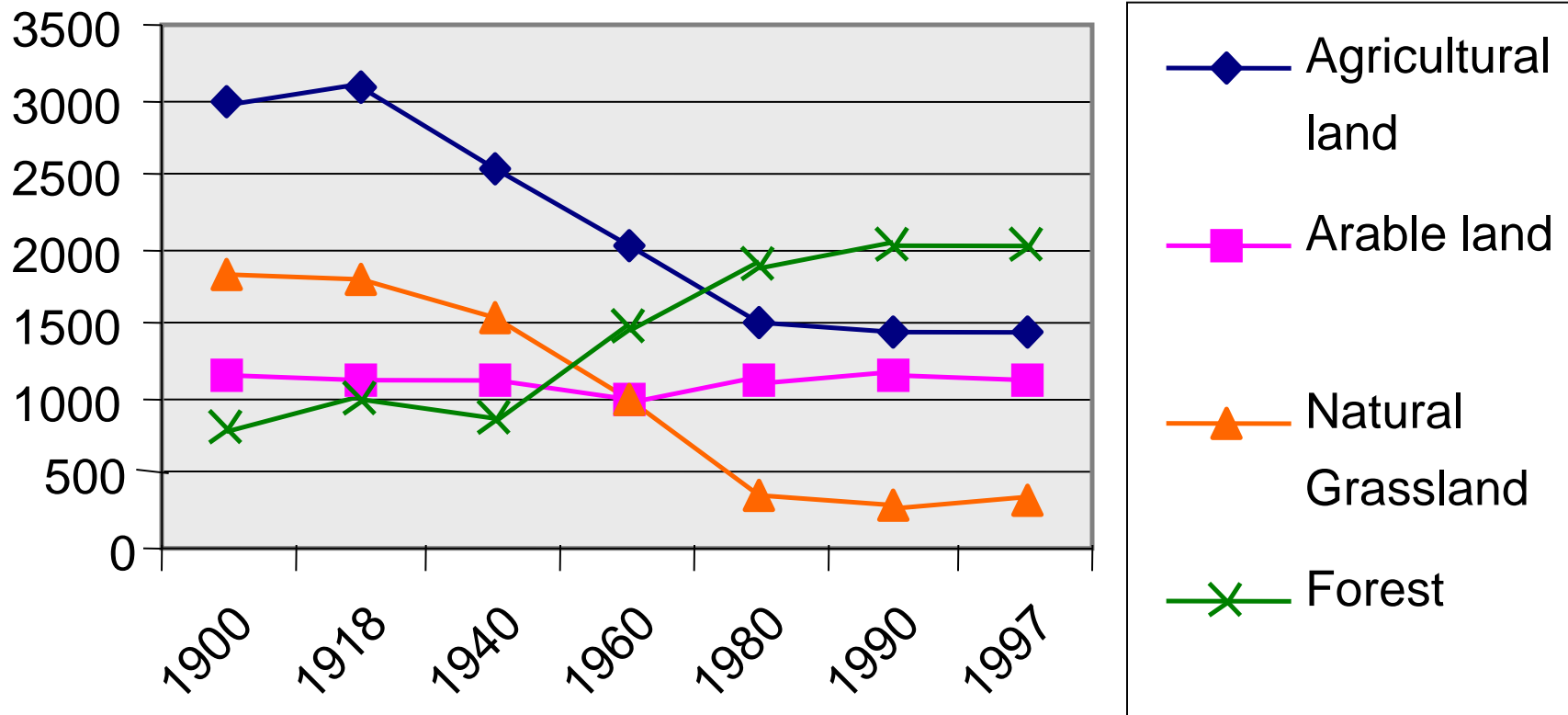
The probable reasons of good state of the butterflies in Estonia:

- favorable climatic changes
- abundance of suitable habitats
- diversity of habitats
- good ecological network of natural communities

Main threats to butterflies in Estonia:

- abandonment and overgrow of suitable habitats
- disappearance of traditional management regimes
- construction activities in valuable habitats (mining, settlement development)
- fragmentation of landscape

Land-use changes in XX century





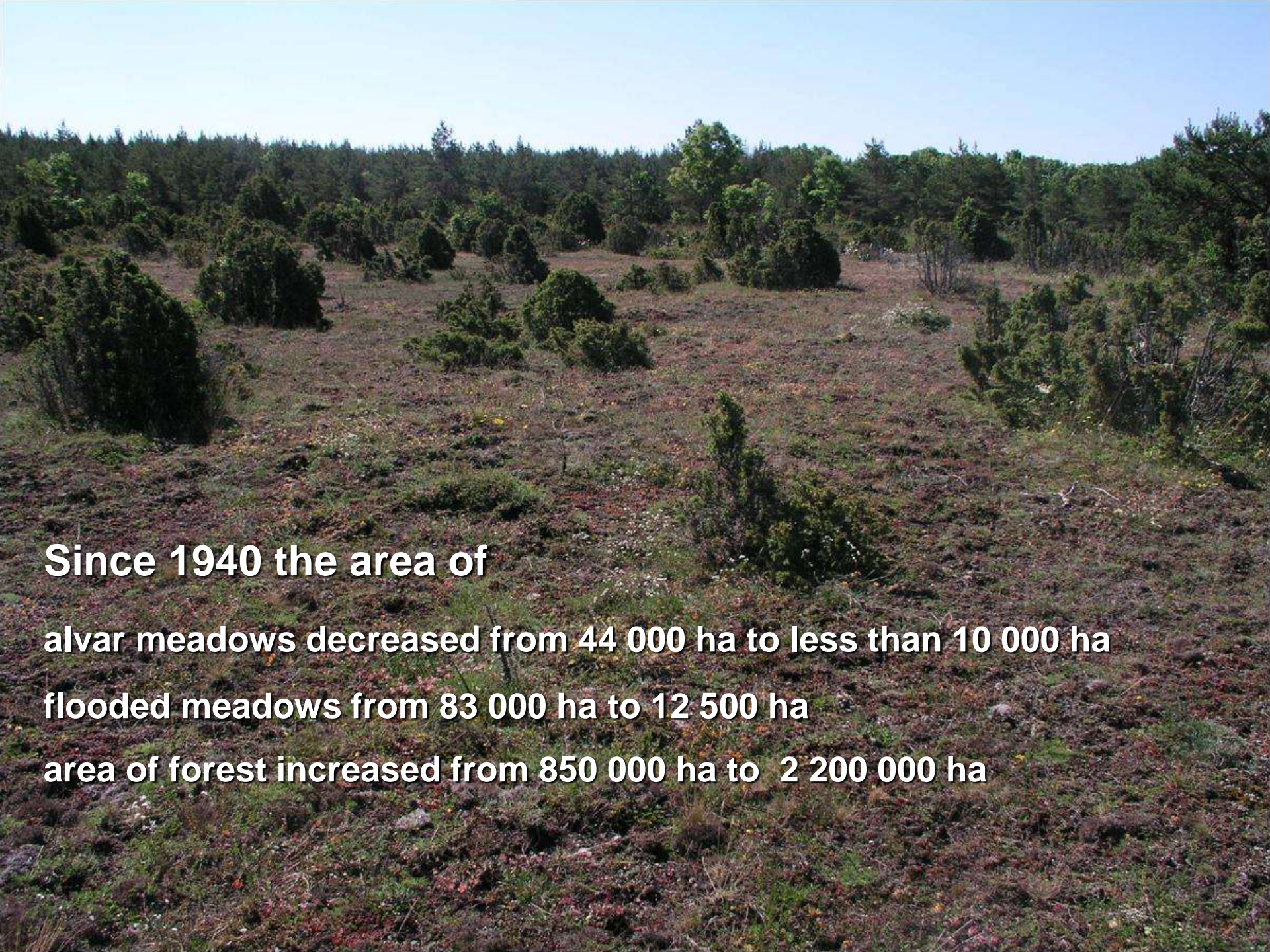
The area of wooded meadows:

beginning of 19th century – 850 000 ha ⇒

1940 – 850 000 ha ⇒

2005 – remained 800 ha

cultivated 200 ha



**Since 1940 the area of
alvar meadows decreased from 44 000 ha to less than 10 000 ha
flooded meadows from 83 000 ha to 12 500 ha
area of forest increased from 850 000 ha to 2 200 000 ha**

Conclusions

Several butterfly species have increased their distribution area and abundance

The exact reasons are unclear (combination of several factors)

However, there is risk to the populations of these butterflies due to the settlement development processes and overgrowing of valuable meadows and other habitats