Citizen science, common bird monitoring and red listing of species

Aleksi Lehikoinen
The Helsinki Lab of Ornithology, HelLO
Finnish Museum of Natural History
aleksi.lehikoinen@helsinki.fi

Outline

- National monitoring schemes
- Engaging volunteers
- International networks
- Making citizen science matter

- Red list evaluation

Monitoring schemes (7 staff members)
http://www.luomus.fi/fi/linnustonseuranta

- Winter bird censuses
- Winter feeding monitoring
- Archipelago bird censuses (SYKE, Metsähallitus)
- Breeding waterbird counts (together with LUKE)
- Landbird point counts
- Line transects (standardized 2006->)
- Breeding bird atlases (last 2006-2010)
- Nest card scheme
- Raptor grid monitoring
- Ringing
- Migration counts

Monitoring schemes (7 staff members)
http://www.luomus.fi/fi/linnustonseuranta

- Winter bird censuses
- Winter feeding monitoring
- Archipelago bird censuses (SYKE, Metsähallitus)
- Breeding waterbird counts (together with LUKE)
- Landbird point counts
- Line transects (standardized 2006->)
- Breeding bird atlases (last 2006-2010)
- Nest card scheme
- Raptor grid monitoring
- Ringing
- Migration counts

Monitoring schemes (7 staff members)
http://www.luomus.fi/fi/linnustonseuranta

- Winter bird censuses
- Winter feeding monitoring
- Archipelago bird censuses (SYKE, Metsähallitus)
- Breeding waterbird counts (together with LUKE)
- Landbird point counts
- Line transects (standardized 2006->)
- Breeding bird atlases (last 2006-2010)
- Nest card scheme
- Raptor grid monitoring
- Ringing
- Migration counts

1. Winter Bird Counts in Finland

http://www.luomus.fi/fi/talvilintulaskennat

- Early winter 1.-14.11. (1976-)
- Mid-winter 25.12.-7.1. (1957-)
- Late winter 21.2.-6.3. (1966-)

1. Winter Bird Counts in Finland
http://www.luomus.fi/fi/talvilintulaskennat

- Early winter 1.-14.11. (1976-)
- Mid-winter 25.12.-7.1. (1957-)
- Late winter 21.2.-6.3. (1966-)
- N. 10 km long own route
- Free choice location

1. Winter Bird Counts in Finland

http://www.luomus.fi/fi/talvilintulaskennat

- Early winter 1.-14.11. (1976-)
- Mid-winter 25.12.-7.1. (1957-)
- Late winter 21.2.-6.3. (1966-)
- N. 10 km long own route
- Free choice location
- All birds are counted
- 8 habitat categories since 1986

1. Winter Bird Counts in Finland

http://www.luomus.fi/fi/talvilintulaskennat

- Early winter 1.-14.11. (1976-)
- Mid-winter 25.12.-7.1. (1957-)
- Late winter 21.2.-6.3. (1966-)
- N. 10 km long own route
- Free choice location
- All birds are counted
- 8 habitat categories since 1986
- C.550 routes/a, c. 1000 volunteers

1. Winter Bird Counts in Finland

http://www.luomus.fi/fi/talvilintulaskennat

- Effort is known: length of the route in different habitats
- Maps digitized

1. Winter Bird Counts in Finland
http://www.luomus.fi/fi/talvilintulaskennat

- Effort is known: length of the route in different habitats
- Maps digitized
- Crop size of trees 1986-> (spruce, pine and rowanberry)
- Sex ratios of species 2010->
- Mammals 2014->

1. Winter Bird Counts in Finland

http://www.luomus.fi/fi/talvilintulaskennat

- Effort is known: length of the route in different habitats
- Maps digitized
- Crop size of trees 1986-> (spruce, pine and rowanberry)
- Sex ratios of species 2010->
- Mammals 2014->
- Often done in teams
- Training of new volunteers

Online tools: reporting and feedback

- \>90% of reports come through online systems
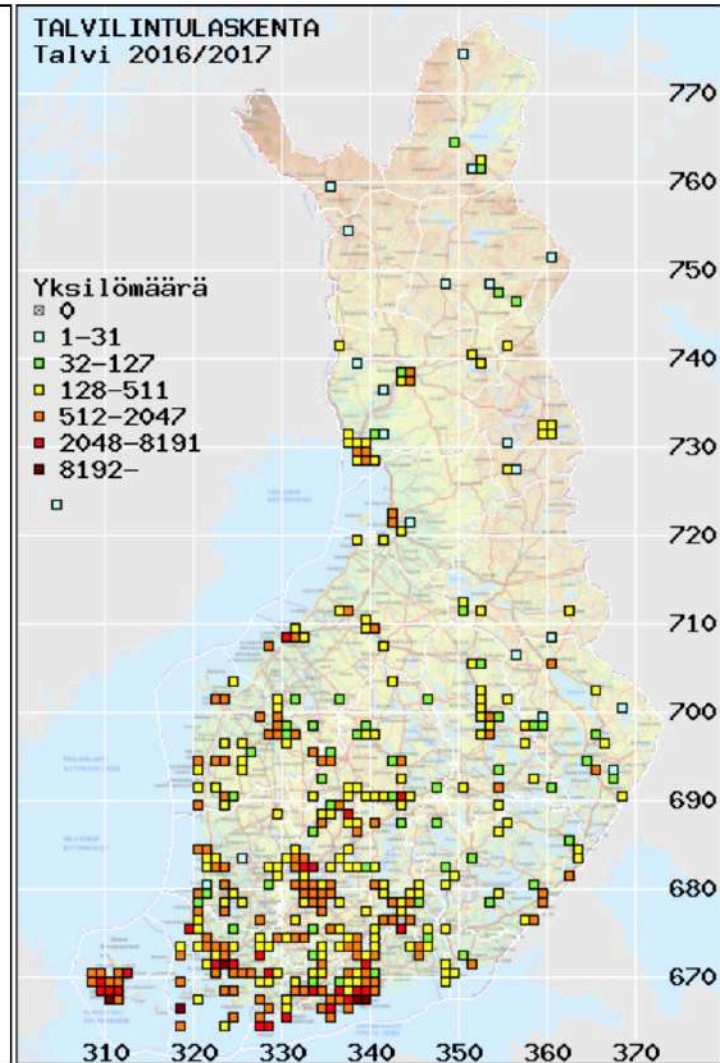- Some automatic and manual control checking

Online tools: reporting and feedback

- >90% of reports come through online systems
- Some automatic and manual control checking
- Directly to the databases
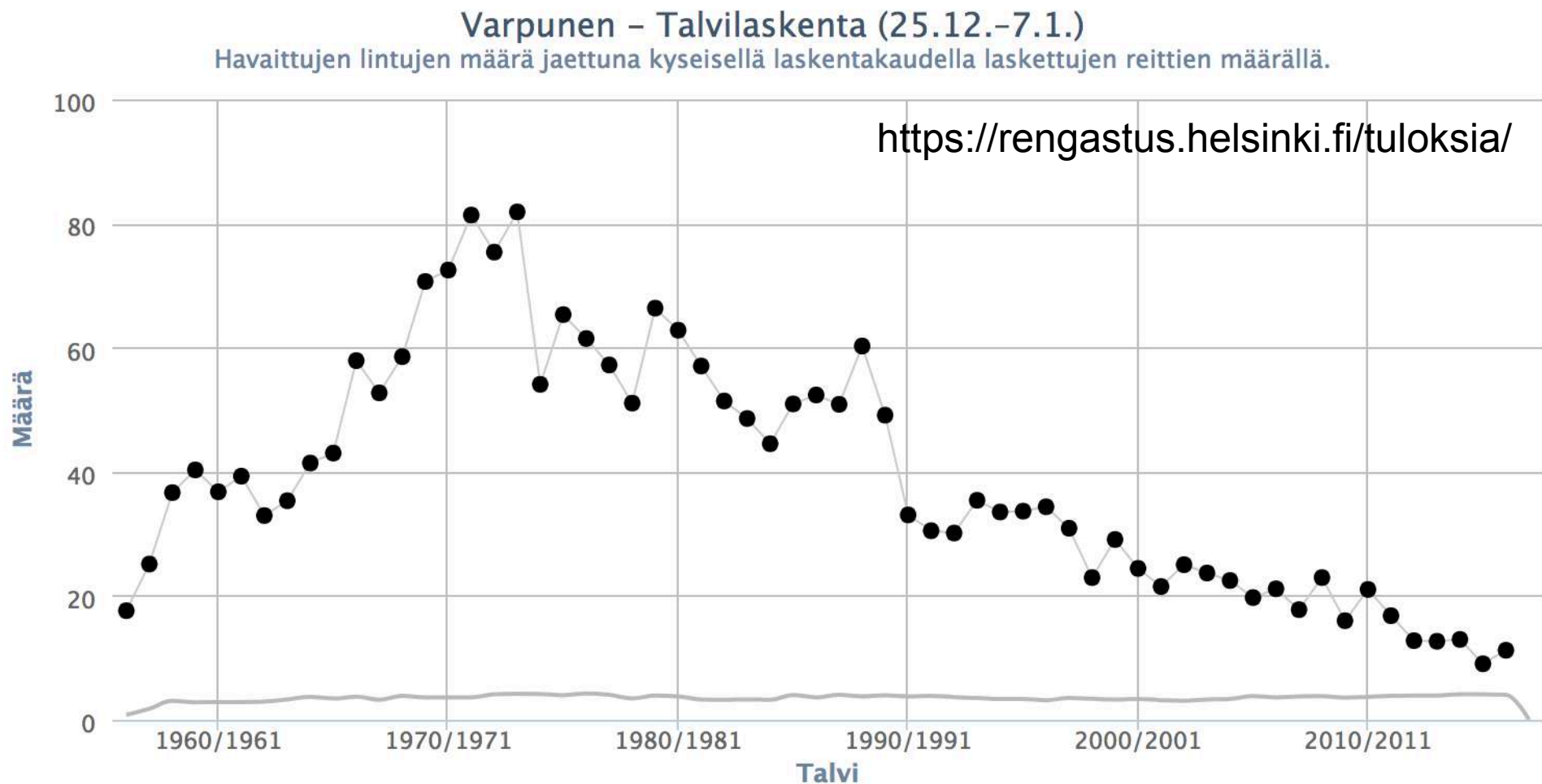- Updates the feedback pages

Online tools: reporting and feedback

Feedpack (web-pages)

- General population trends
- Information of own route

Varpunen – Talvilaskenta (25.12.–7.1.)
Havaittujen lintujen määrä jaettuna kyseisellä laskentakaudella laskettujen reittien määrällä.

https://rengastus.helsinki.fi/tuloksia/

Feedpack

- General population trends
- Information of own route
- **Press releases, articles**

Varpunen – Talvilaskenta (25.12.–7.1.)
Havaittujen lintujen määrä jaettuna kyseisellä laskentakaudella laskettujen reittien määrällä.

Feedpack

- General population trends
- Information of own route
- Press releases, articles
- **Social media**

Varpunen – Talvilaskenta (25.12.–7.1.)
Havaittujen lintujen määrä jaettuna kyseisellä laskentakaudella laskettujen reittien määrällä.

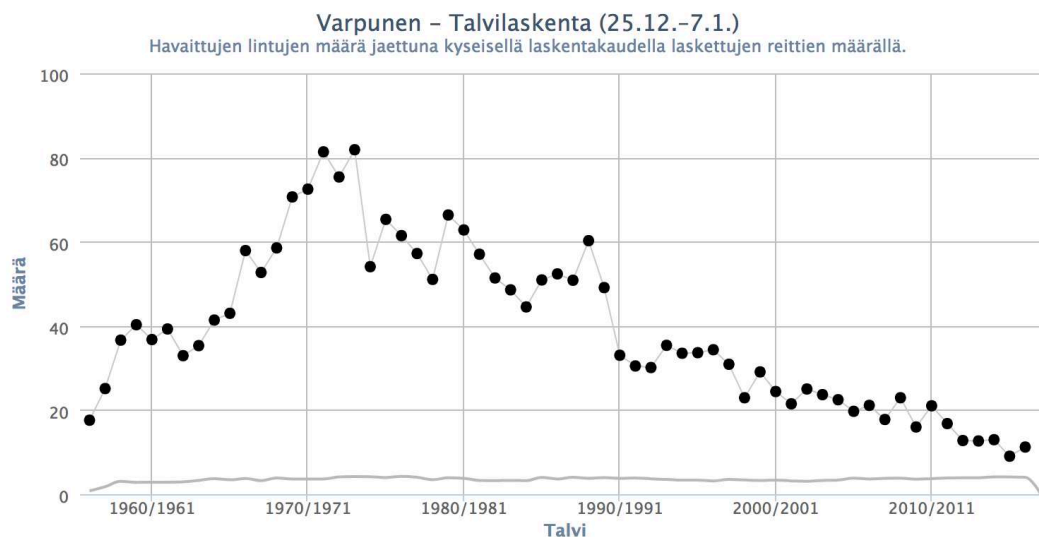Tykkää   Seuraa   Jaa   ...

Linnustonseuranta
Julkaisija: Päivi Sirkiä [?] · 31. lokakuuta kello 10:47 ·

Talvilintulaskennat alkavat keskiviikkona 1.11. syyslaskentajaksolla! Tulevien parin viikon aikana sadat uutterat laskijat kiertävät vuodesta toiseen samoina pysyvät laskentareittinsä. Kun kaikki havaitut linnut lasketaan, saadaan hyvä käsitys lajien runsauksien vaihtelusta. Syyslaskenta paljastaa muun muassa kuinka paljon muuttolintuja on jäänyt viivyttelemään ja kuinka paljon marjoille persoja tilhiä ja rastaita on eri puolilla maata. Talvilintulaskenta on hauska tapa harrastaa lintuja muuten hiljaisena vuodenaikana ja osallistua samalla arvokkaaseen seurantaan. Lisätietoja talvilintulaskennoista:
https://www.luomus.fi/fi/talvilintulaskennat

Feedpack

- General population trends
- Information of own route
- Press releases, articles
- Social media
- **Monitoring news, birding societies**

Varpunen – Talvilaskenta (25.12.–7.1.)
Havaittujen lintujen määrä jaettuna kyseisellä laskentakaudella laskettujen reittien määrällä.

Tykkää   Seuraa   Jaa   ...
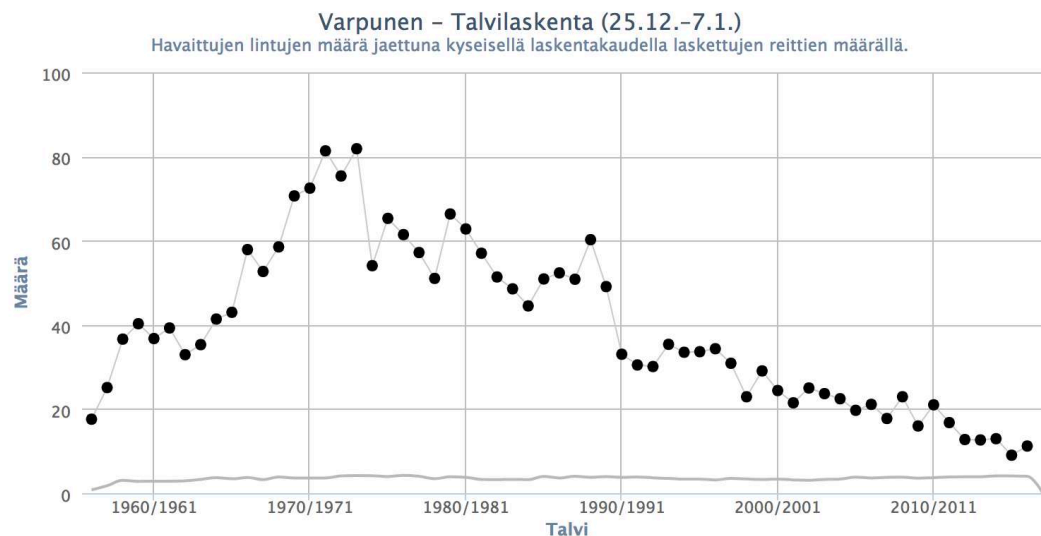
LUOMUS **Linnustonseuranta**
Julkaisija: Päivi Sirkiä [?] · 31. lokakuuta kello 10:47 · ℮

Talvilintulaskennat alkavat keskiviikkona 1.11. syyslaskentajaksolla!
Tulevien parin viikon aikana sadat uutterat laskijat kiertävät vuodesta
toiseen samoina pysyvät laskentareittinsä. Kun kaikki havaitut linnut
lasketaan, saadaan hyvä käsitys lajien runsauksien vaihtelusta.
Syyslaskenta paljastaa muun muassa kuinka paljon muuttolintuja on
jäänyt viivyttelemään ja kuinka paljon marjoille persoja tilhiä ja rastaita on
eri puolilla maata. Talvilintulaskenta on hauska tapa harrastaa lintuja
muuten hiljaisena vuodenaikana ja osallistua samalla arvokkaaseen
seurantaan. Lisätietoja talvilintulaskennoista:
https://www.luomus.fi/fi/talvilintulaskennat

Feedpack

- General population trends
- Information of own route
- Press releases, articles
- Social media
- Monitoring news, birding societies
- **Meetings for observers**
- **Personal feedback**

Varpunen – Talvilaskenta (25.12.–7.1.)
Havaittujen lintujen määrä jaettuna kyseisellä laskentakaudella laskettujen reittien määrällä.
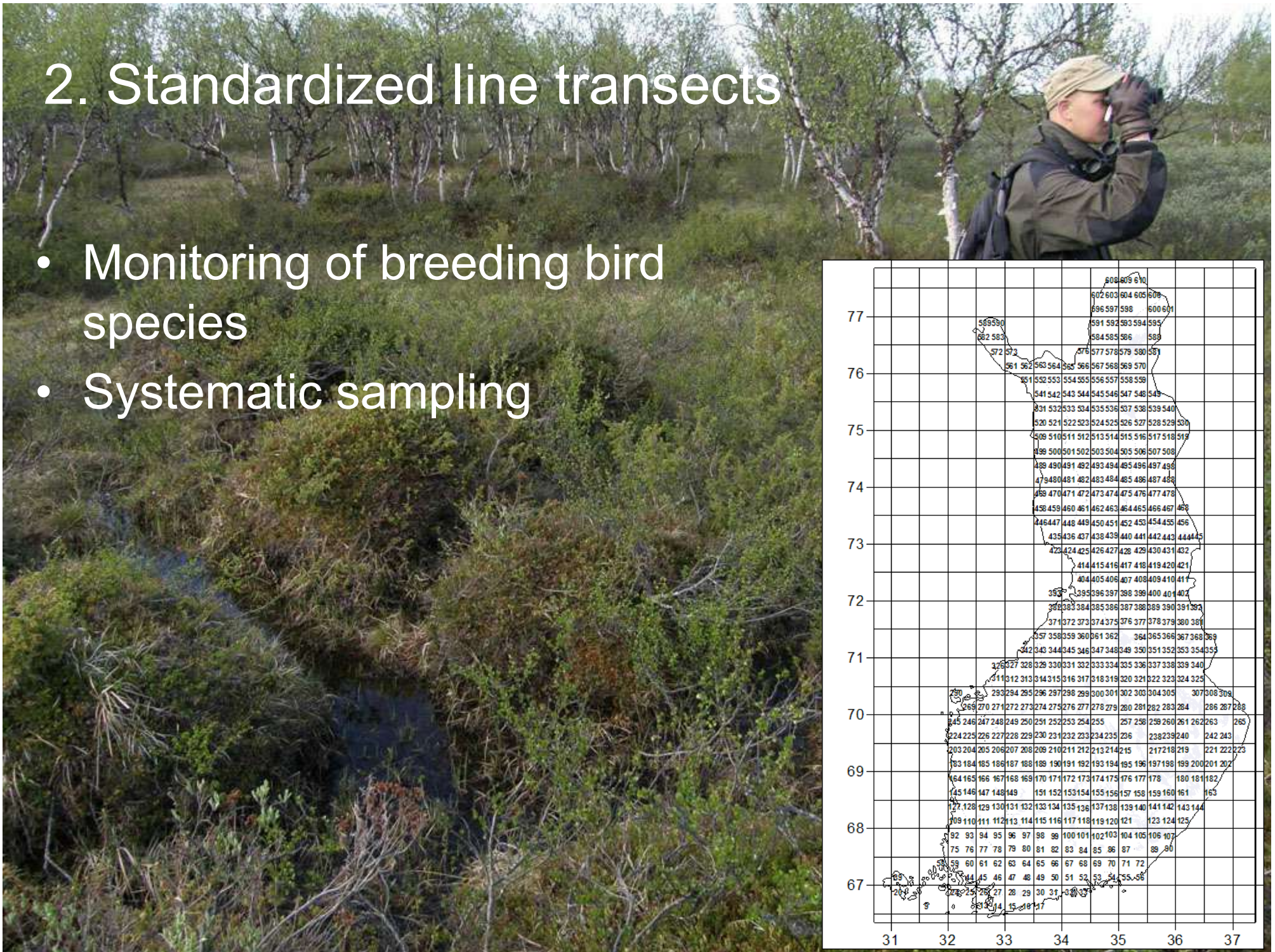

Tykkää   Seuraa   Jaa   ...

Linnustonseuranta
Julkaisija: Päivi Sirkiä [?] · 31. lokakuuta kello 10:47 · ⊙

Talvilintulaskennat alkavat keskiviikkona 1.11. syyslaskentajaksolla! Tulevien parin viikon aikana sadat uutterat laskijat kiertävät vuodesta toiseen samoina pysyvät laskentareittinsä. Kun kaikki havaitut linnut lasketaan, saadaan hyvä käsitys lajien runsauksien vaihtelusta. Syyslaskenta paljastaa muun muassa kuinka paljon muuttolintuja on jäänyt viivyttelemään ja kuinka paljon marjoille persoja tilhiä ja rastaita on eri puolilla maata. Talvilintulaskenta on hauska tapa harrastaa lintuja muuten hiljaisena vuodenaikana ja osallistua samalla arvokkaaseen seurantaan. Lisätietoja talvilintulaskennoista:
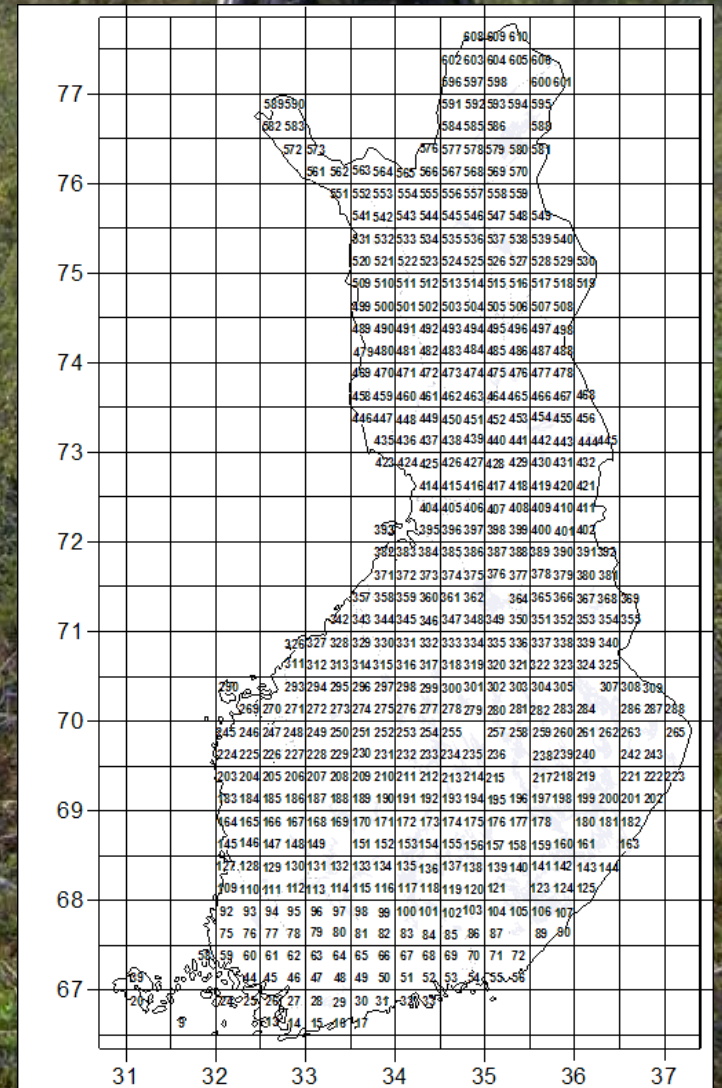https://www.luomus.fi/fi/talvilintulaskennat

2. Standardized line transects

- Monitoring of breeding bird species
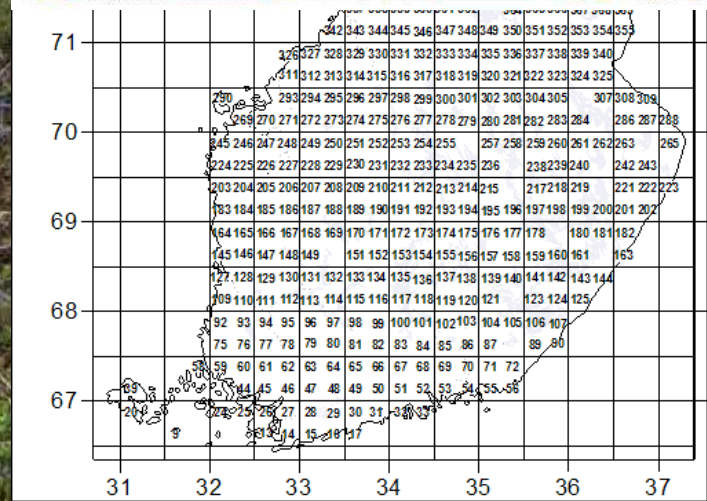- Systematic sampling

2. Standardized line transects

- Monitoring of breeding bird species
- Systematic sampling
- 566 transects, since 2006
- Whole Finland 25 km interval, 6 km long (1 x 2 km rectangle)
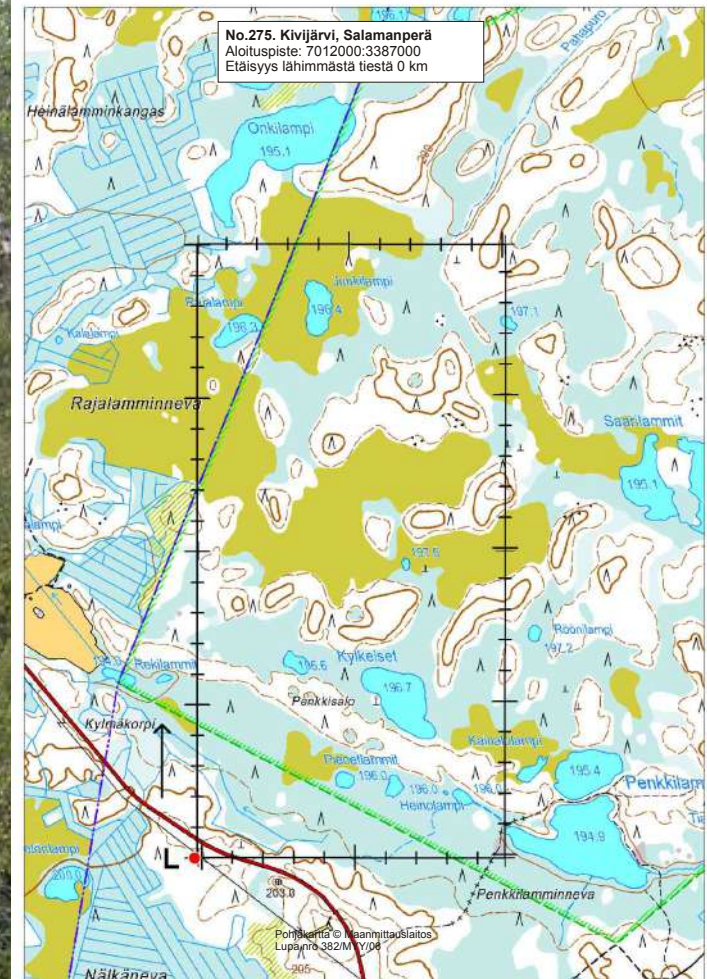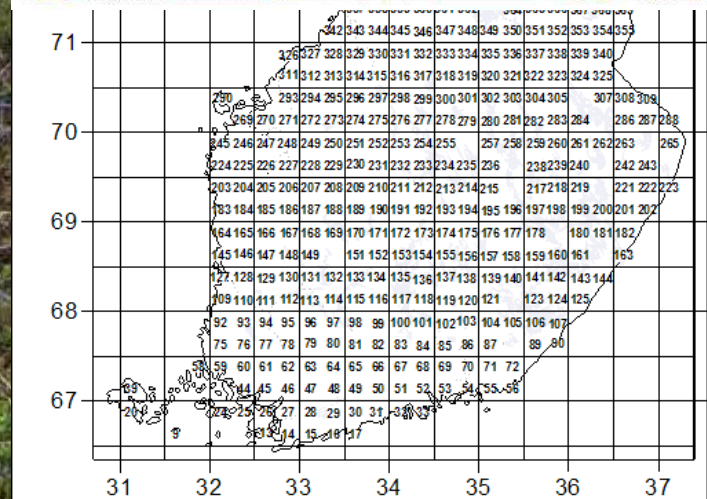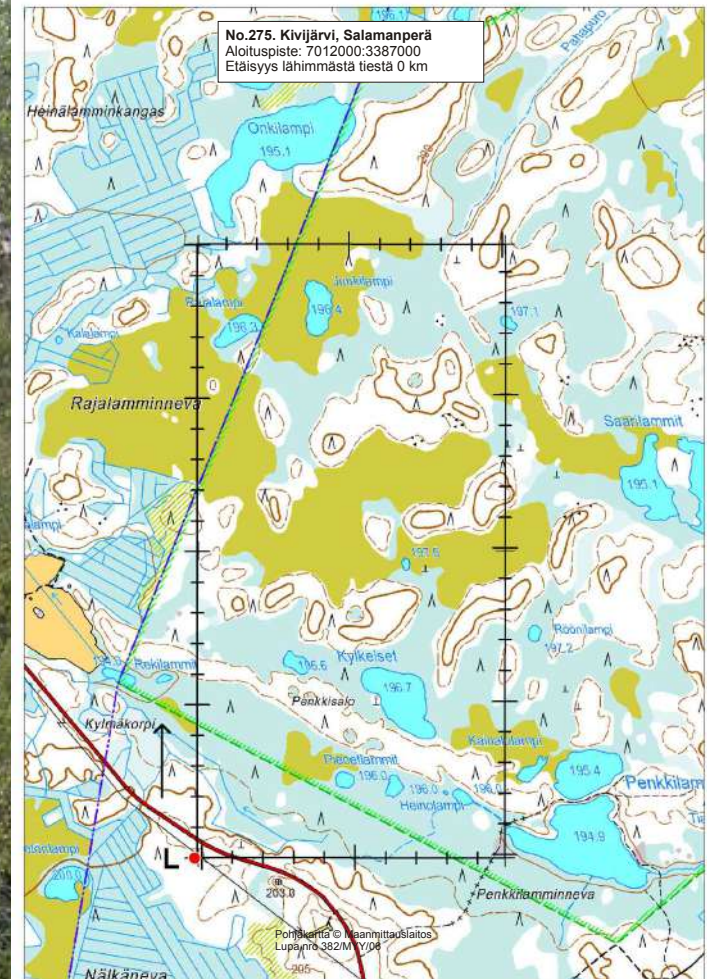
2. Standardized line transects

- Monitoring of breeding bird species
- Systematic sampling
- 566 transects, since 2006
- Whole Finland 25 km interval, 6 km long (1 x 2 km rectangle)

2. Standardized line transects

- Monitoring of breeding bird species
- Systematic sampling
- 566 transects, since 2006
- Whole Finland 25 km interval, 6 km long (1 x 2 km rectangle)
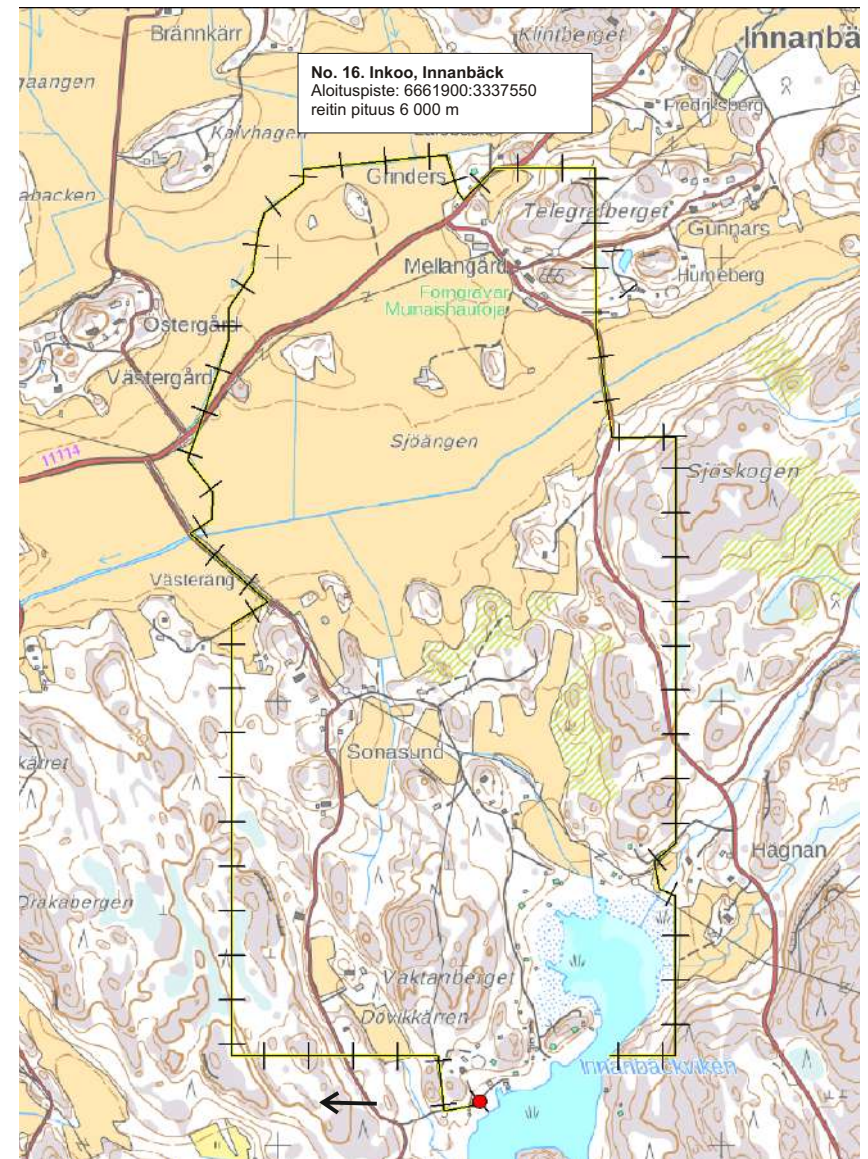- Counted in June, c. 4–9 a.m.
- 200-300 repeated annually, 100+ volunteers
- Safety instructions!

2. Line transect counts

- Walking along the line

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m

2. Line transect counts

- Walking along the line

- 50 metres habitat blocks

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m
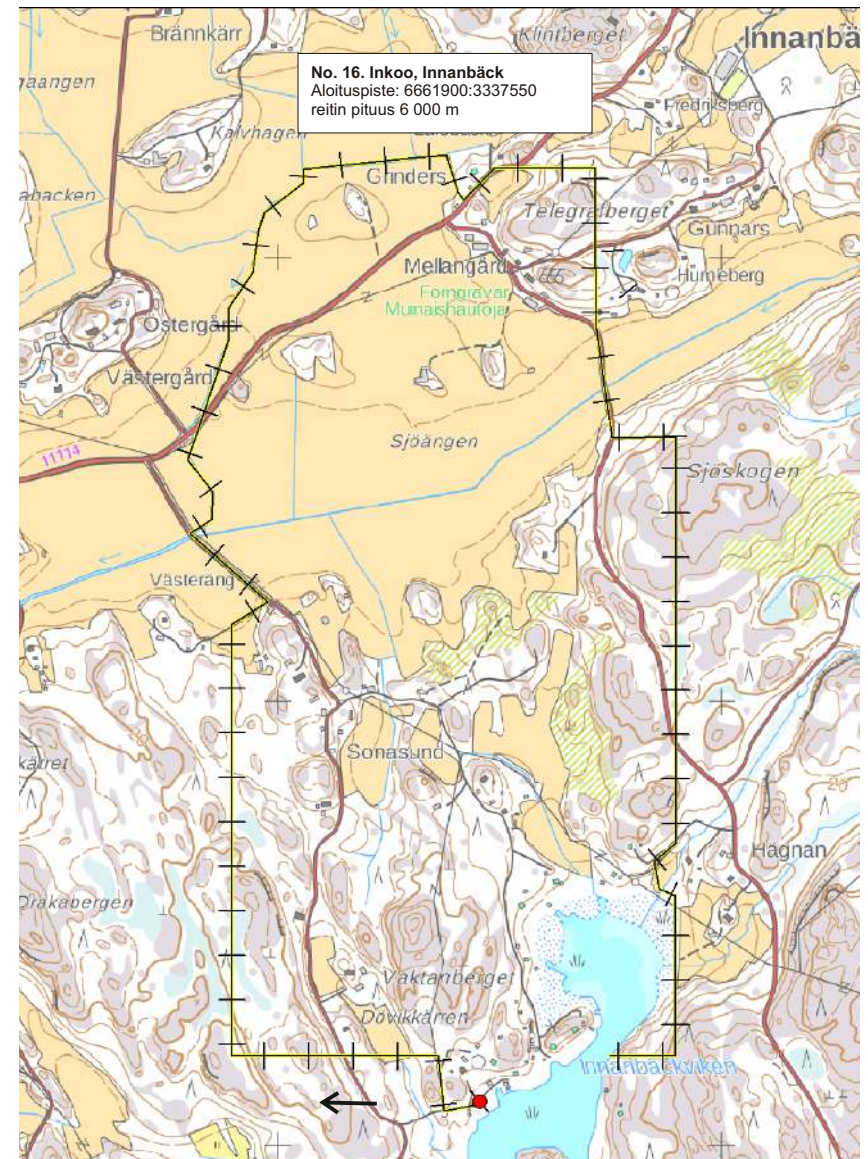
Wader densities according to the type of the open mire
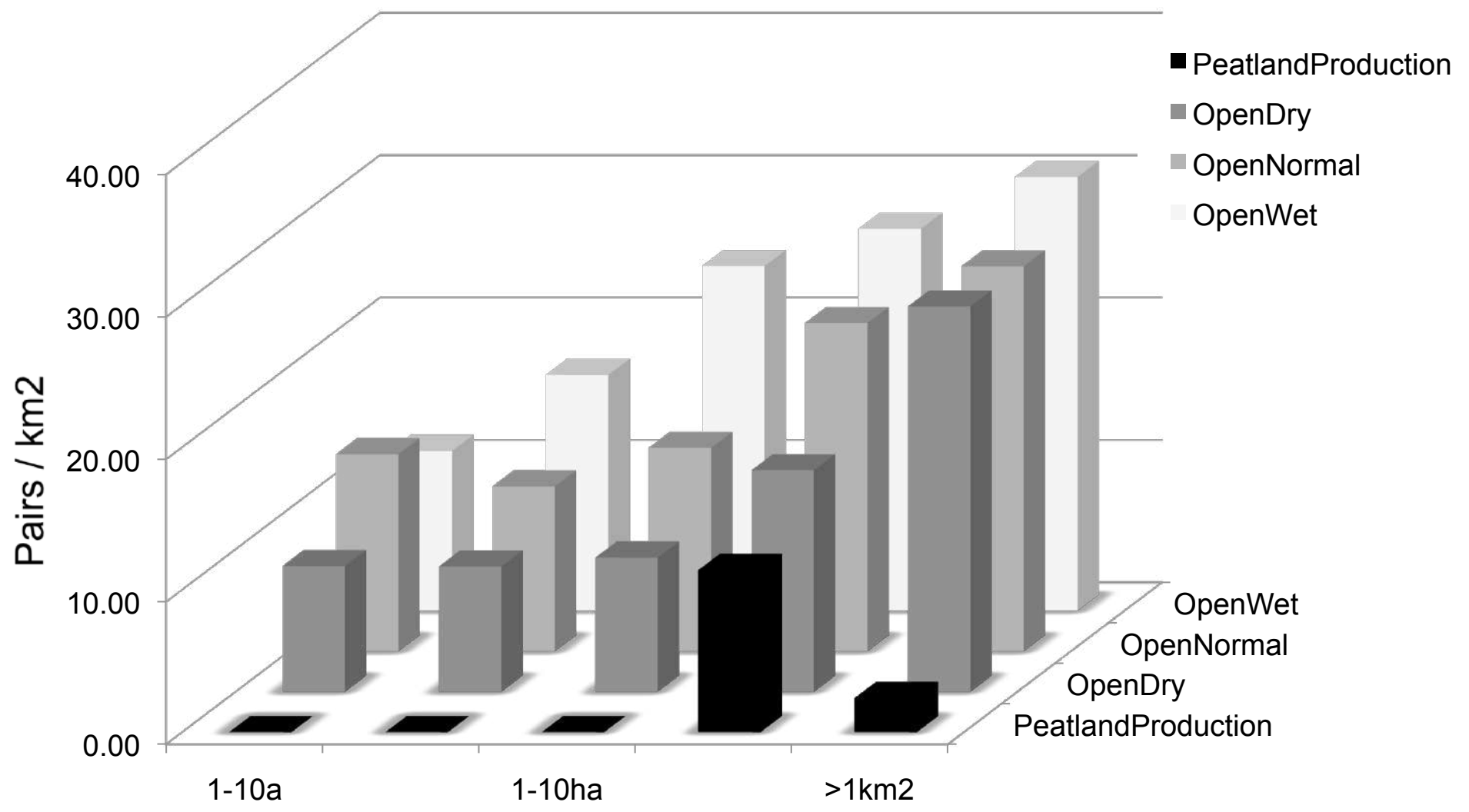
2. Line transect counts

- Walking along the line
- 50 metres habitat blocks

- Type of observation: singing, calling, seen etc

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m
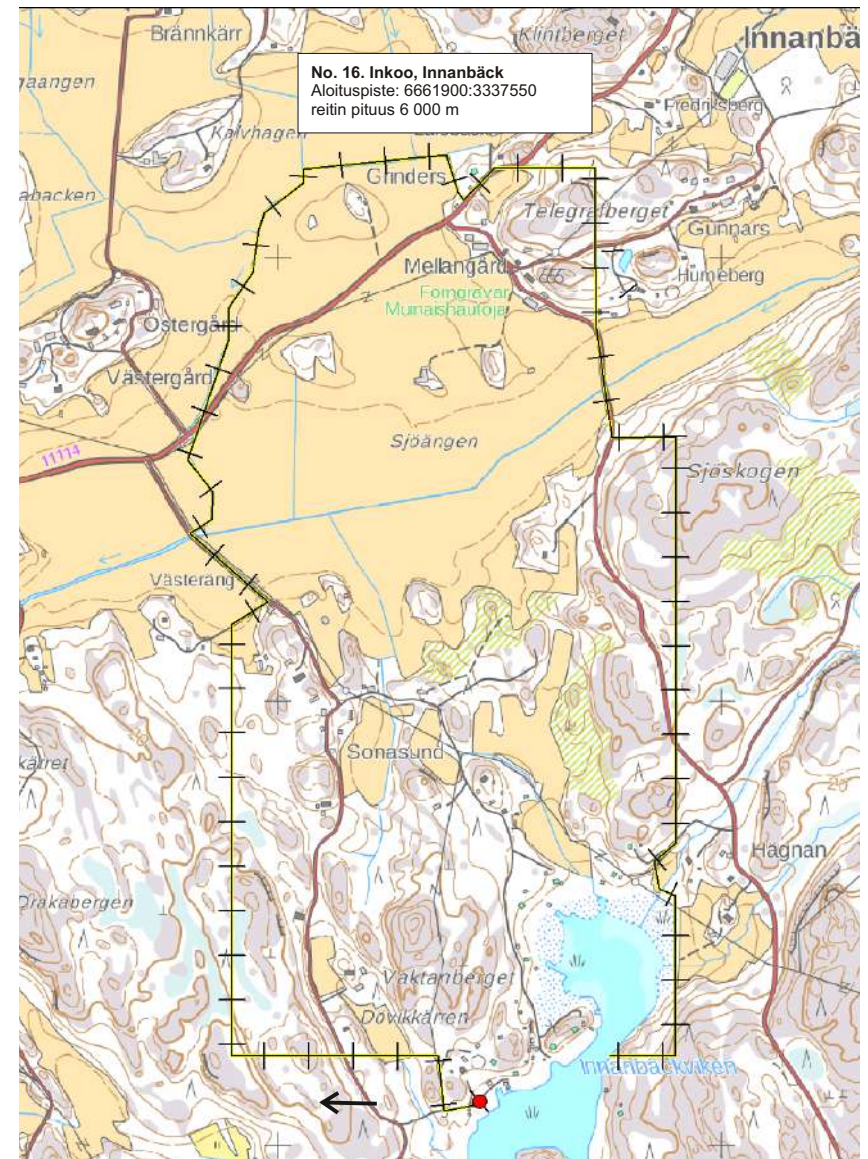
2. Line transect counts

- Walking along the line
- 50 metres habitat blocks
- Type of observation: singing, calling, seen etc
- GPS handy tool, some borrowed from UH

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m

Change in the central gravity of breeding landbirds

a)

b)
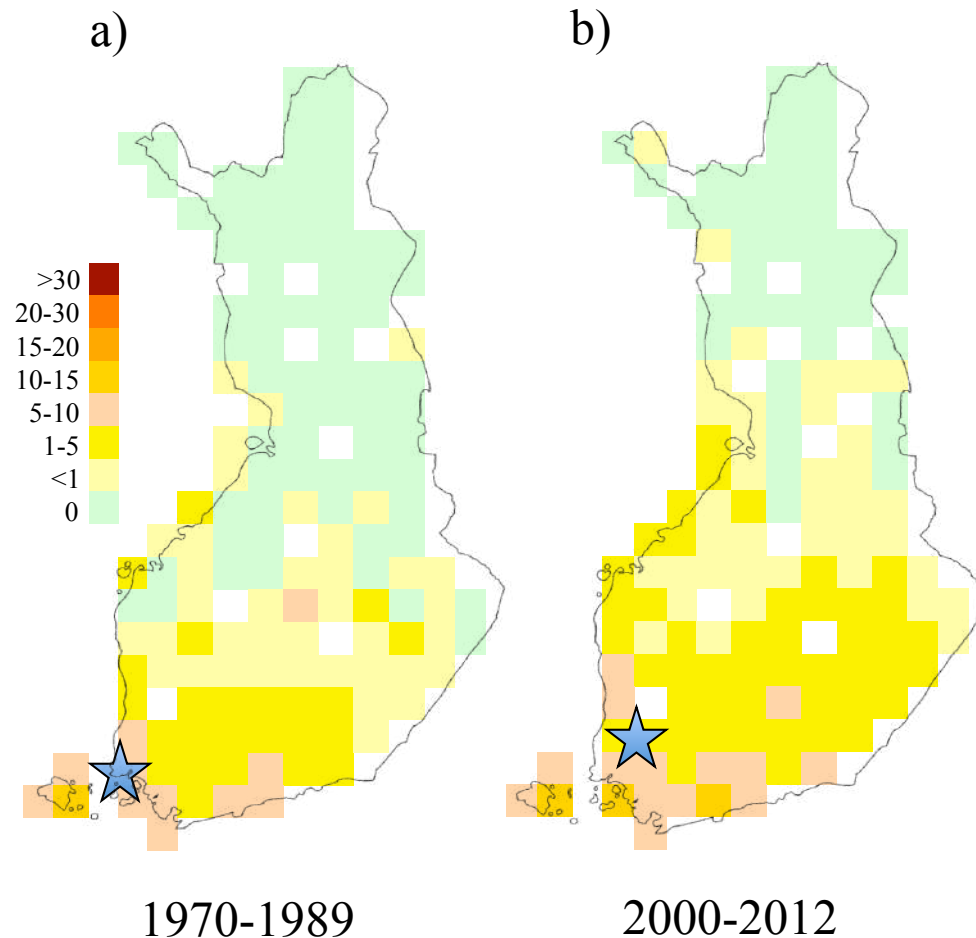
1970-1989

2000-2012

Blackbird

Lehikoinen & Virkkala 2016: Global Change Biol 22: 1121–1129

Change in the central gravity of breeding landbirds

a) b) c) d)

| >30 |
| 20-30 |
| 15-20 |
| 10-15 |
| 5-10 |
| 1-5 |
| <1 |
| 0 |

1970-1989 2000-2012 1970-1989 2000-2012

Blackbird Brambling

Change in the central gravity of breeding landbirds (≈ 16 km NNE / decade)
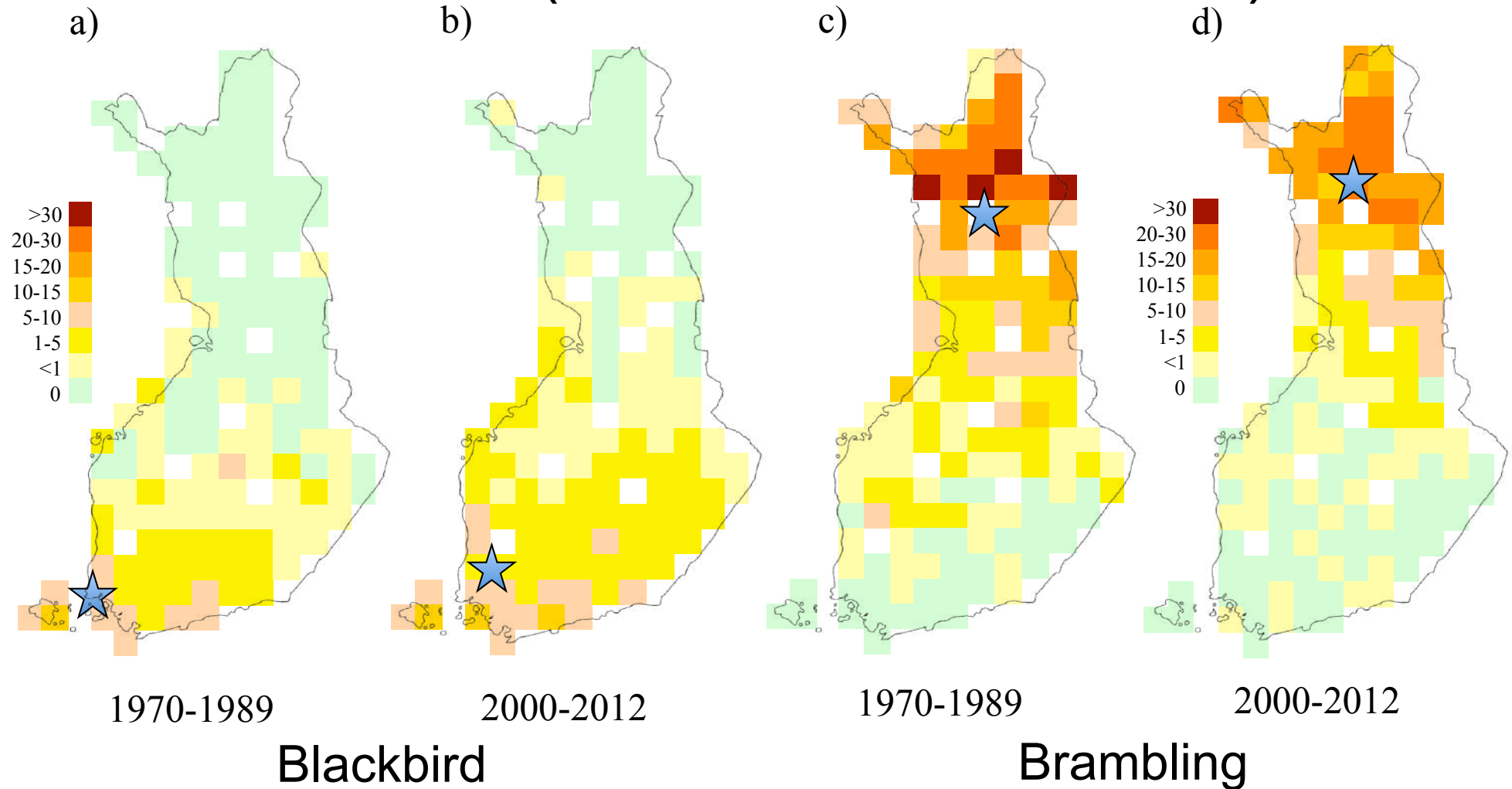
a)

b)

c)

d)

>30
20-30
15-20
10-15
5-10
1-5
<1
0

>30
20-30
15-20
10-15
5-10
1-5
<1
0

1970-1989

2000-2012

1970-1989

2000-2012

Blackbird

Brambling

Lehikoinen & Virkkala 2016: Global Change Biol 22: 1121–1129

2. Line transect counts

- Online booking system

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m

2. Line transect counts

- Online booking system

- Observers can book their favourite transects

2. Line transect counts

- Online booking system
- Observers can book their favourite transects
- Not many "own" routes
- Gap routes highlighted

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m
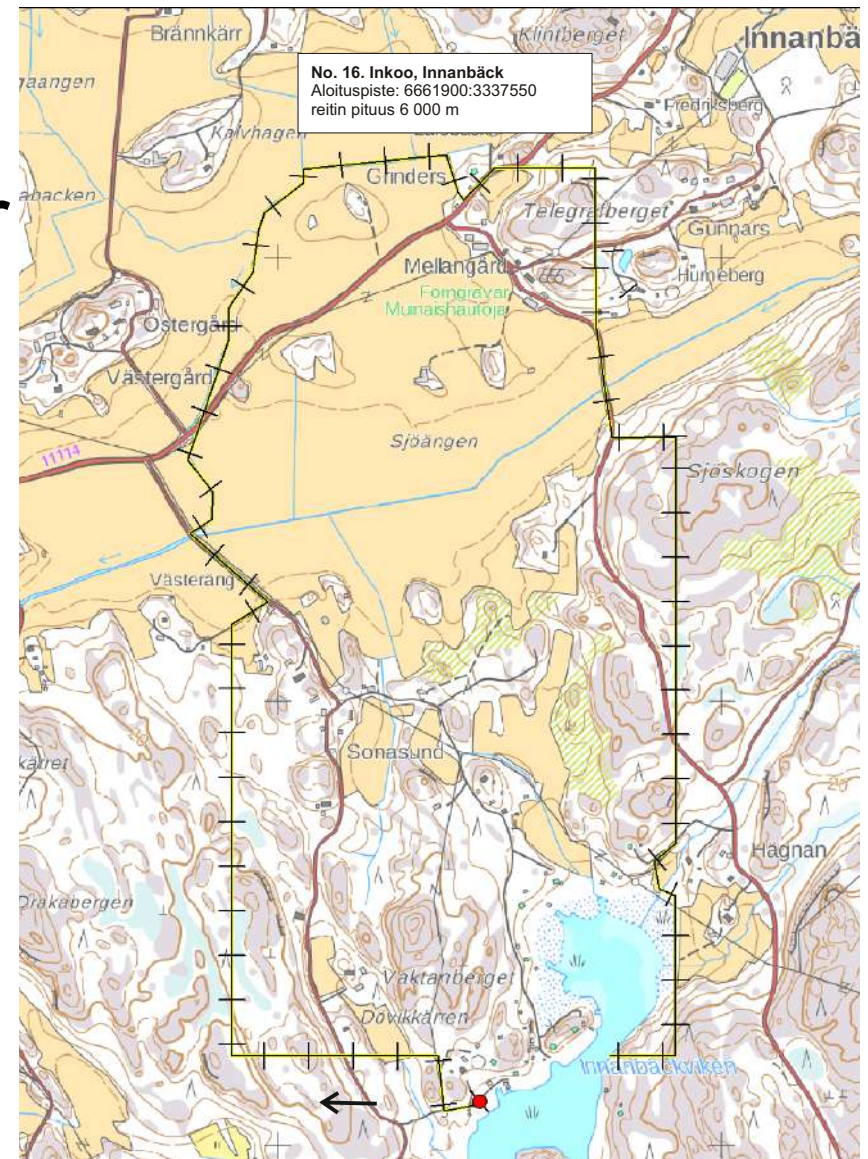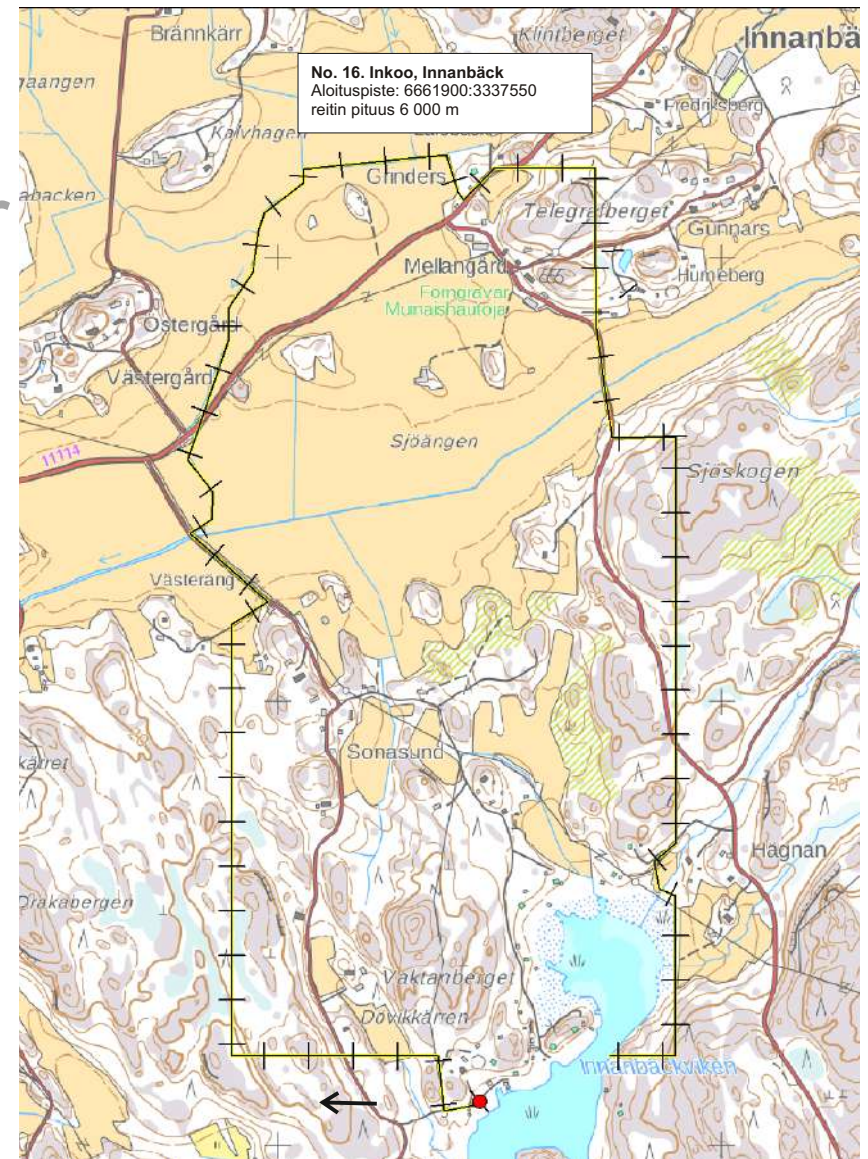
2. Line transect counts

- Online booking system
- Observers can book their favourite transects
- Not many "own" routes
- Gap routes highlighted
- **Whatsapp group for observers 2017: shared guidance and fun!**

No. 16. Inkoo, Innanbäck
Aloituspiste: 6661900:3337550
reitin pituus 6 000 m
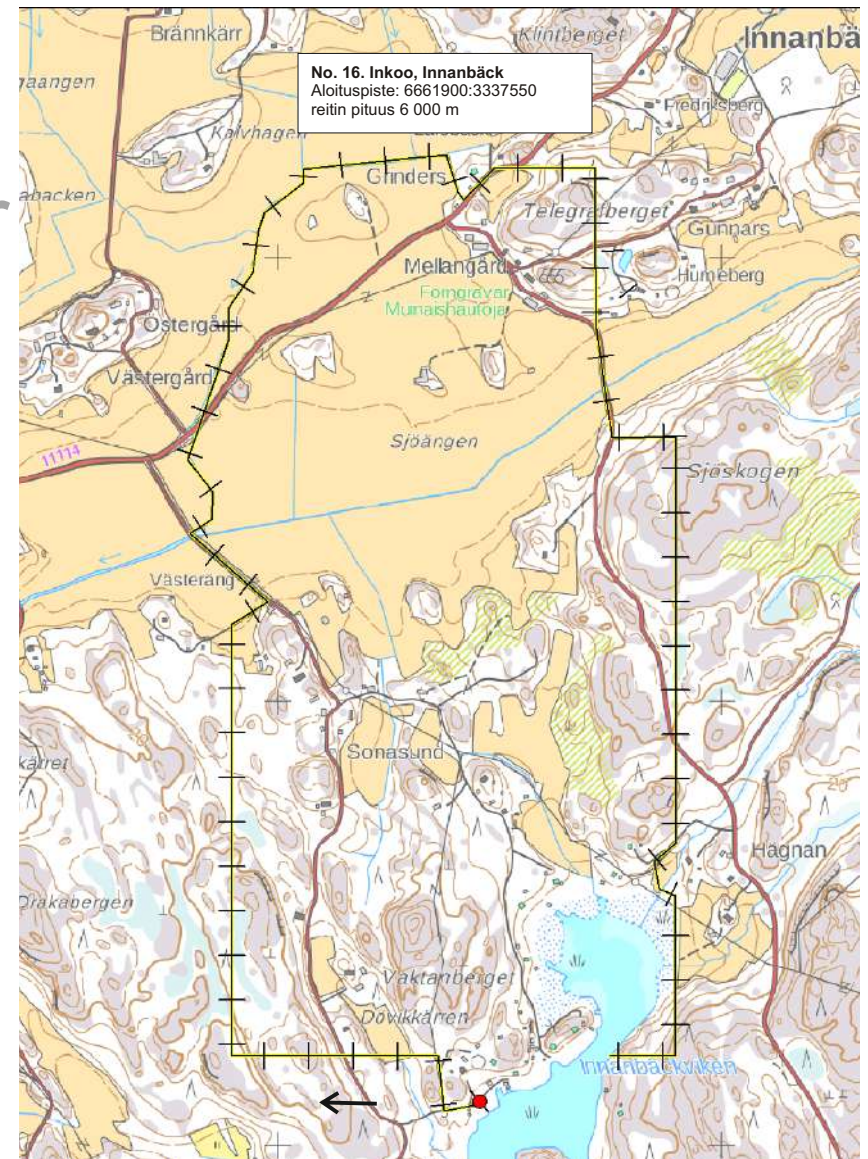
3. Atlas work

- What is a probability that species is breeding in 10x10km square?

3. Atlas work

- What is a probability that species is breeding in 10x10km square?

i) Possible

ii) Probable

iii) Confirmed

LINTUATLAS 2006–2010
Cygnus cygnus
Laulujoutsen

SELVITYSASTE
Erinomainen
Hyvä
Tyydyttävä
Välttävä
Satunnaistietoja
Ei havaintoja

LAJIN PESINTÄ
● Varma 2193
◇ Todennäköinen 388
‹ Mahdollinen 533

3. Atlas work

- 3 atlas in Finland
- Latest 2006-2010 online

http://atlas3.lintuatlas.fi/

3. Atlas work

- 3 atlas in Finland
- Latest 2006-2010 online
- Gap areas

LINTUATLAS 2006-2010
Cygnus cygnus
Laulujoutsen

SELVITYSASTE
Erinomainen
Hyvä
Tyydyttävä
Välttävä
Satunnaistietoja
Ei havaintoja

LAJIN PESINTÄ
Varma 2193
Todennäköinen 388
Mahdollinen 533

http://atlas3.lintuatlas.fi/

3. Atlas work

- 3 atlas in Finland

- Latest 2006-2010 online

- Gap areas

- >5000 participants

http://atlas3.lintuatlas.fi/
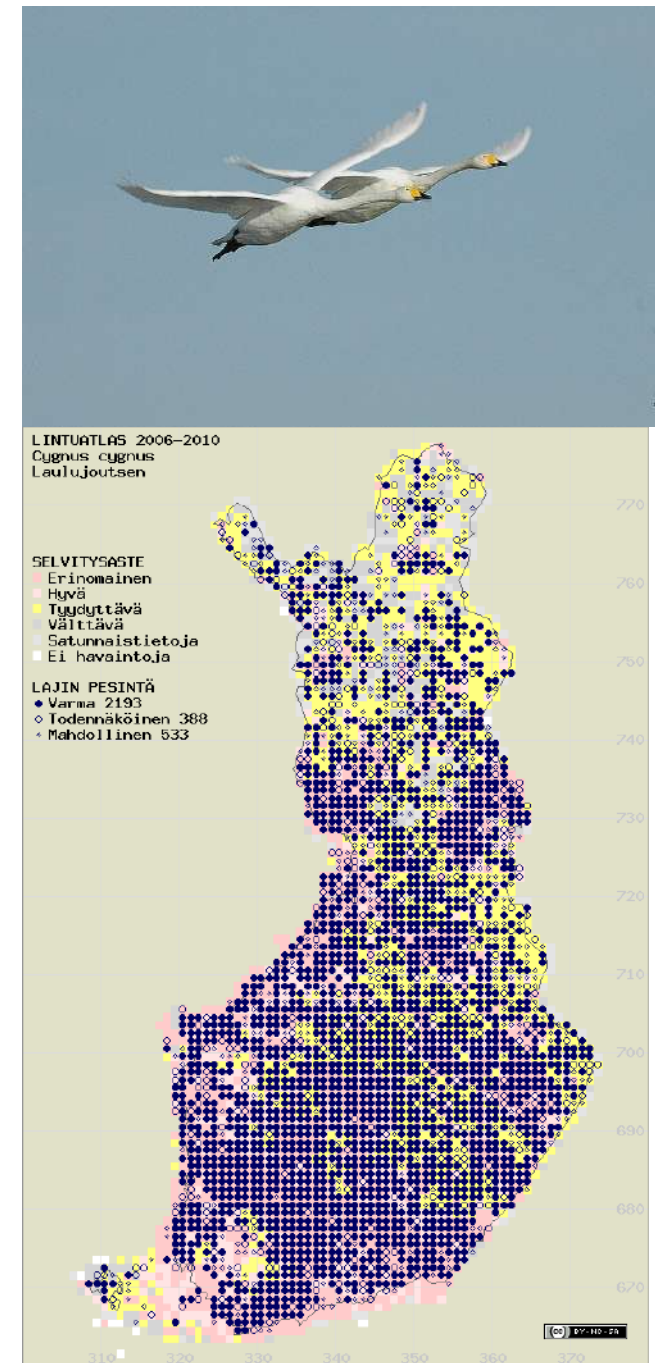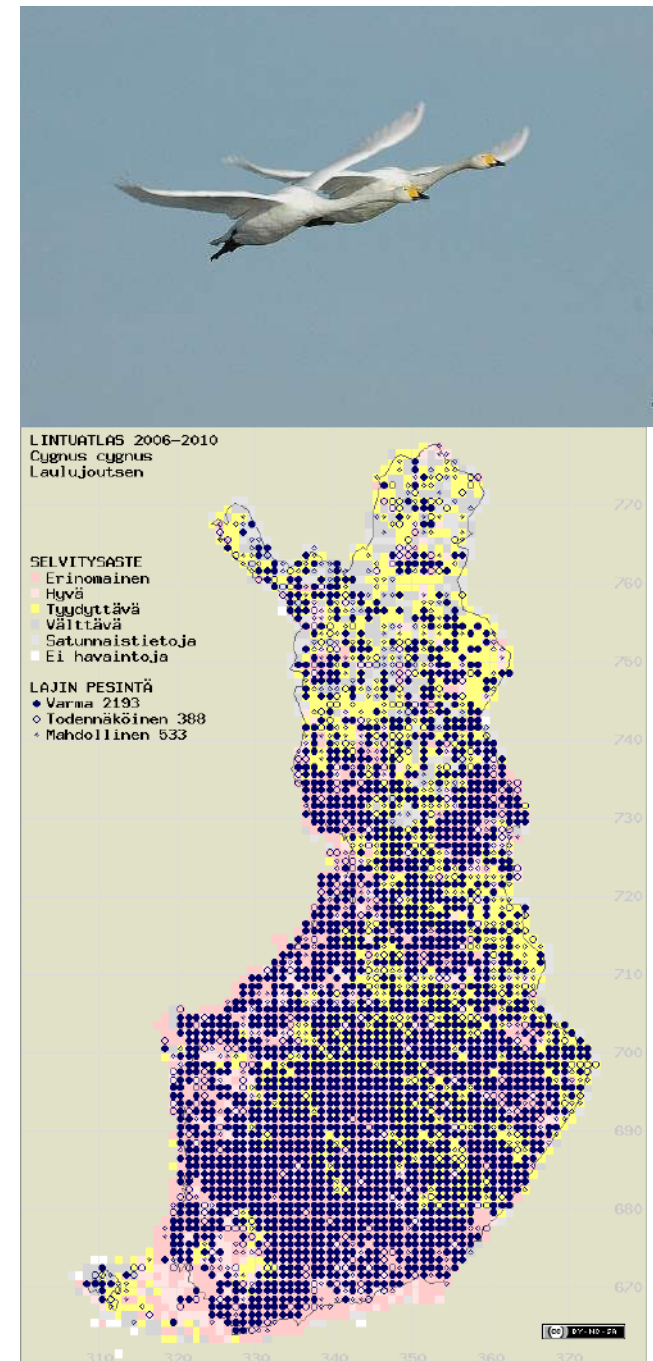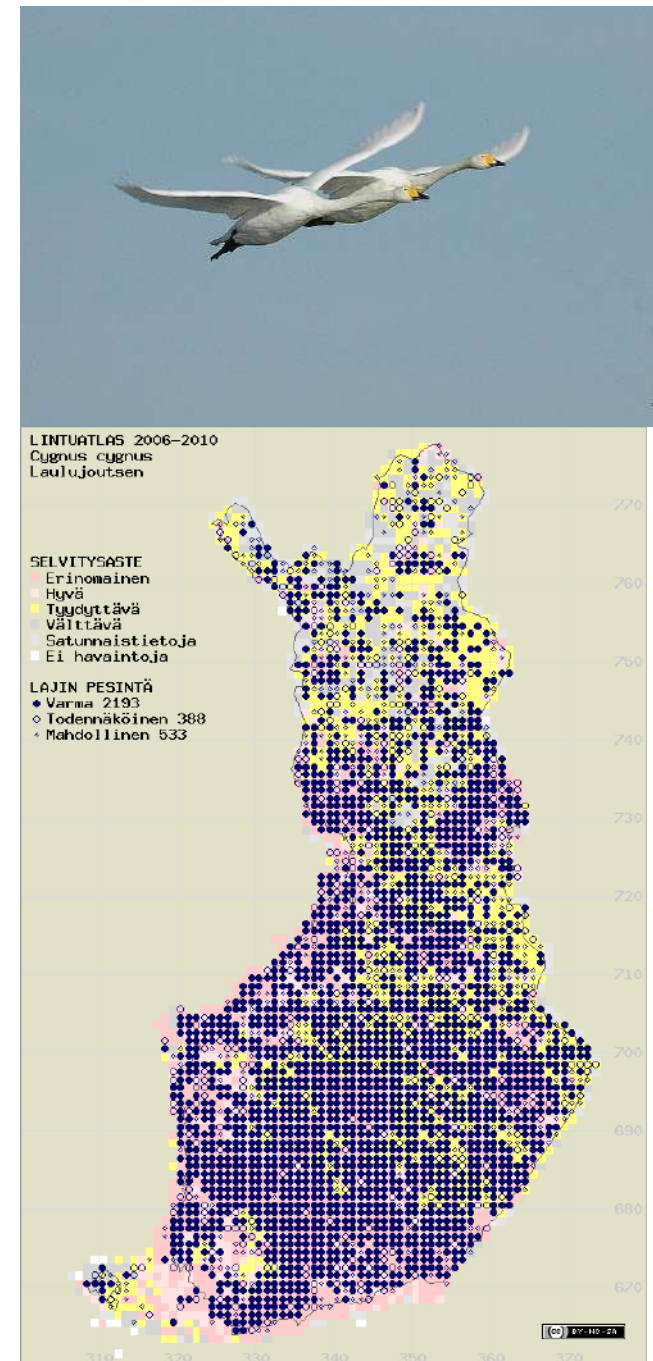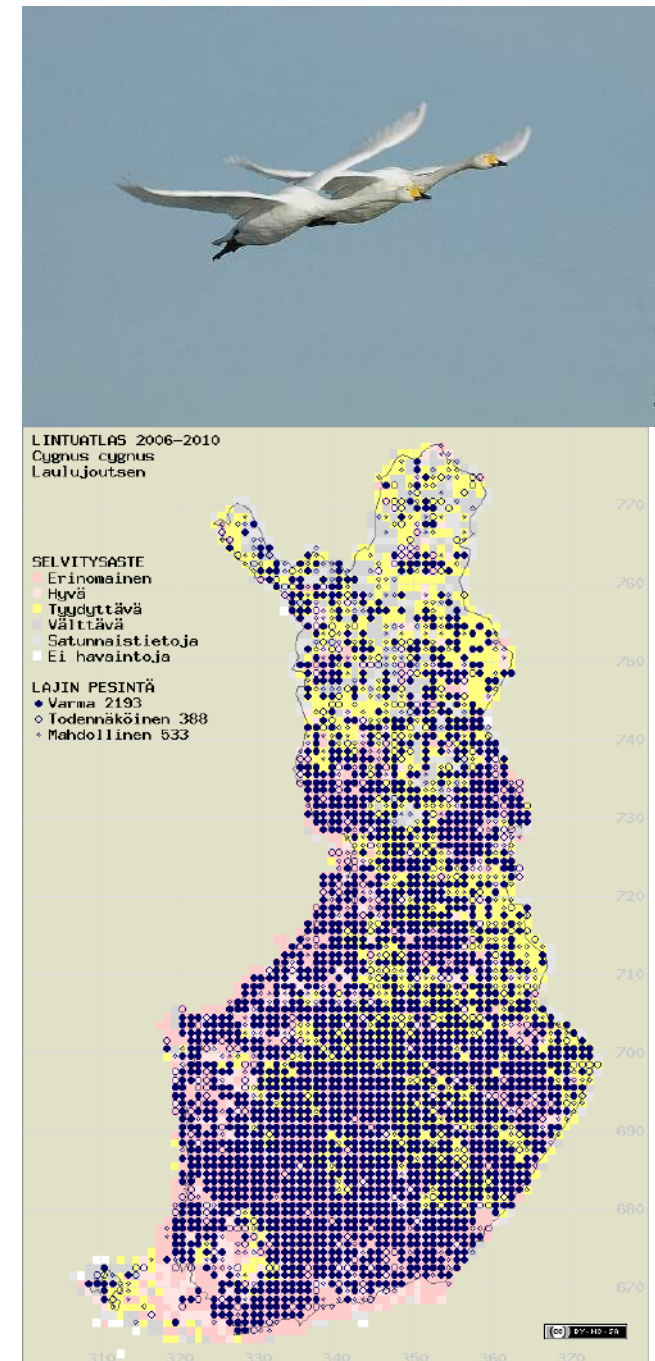
3. Atlas work

- 3 atlas in Finland
- Latest 2006-2010 online
- Gap areas
- >5000 participants
- One coordinator
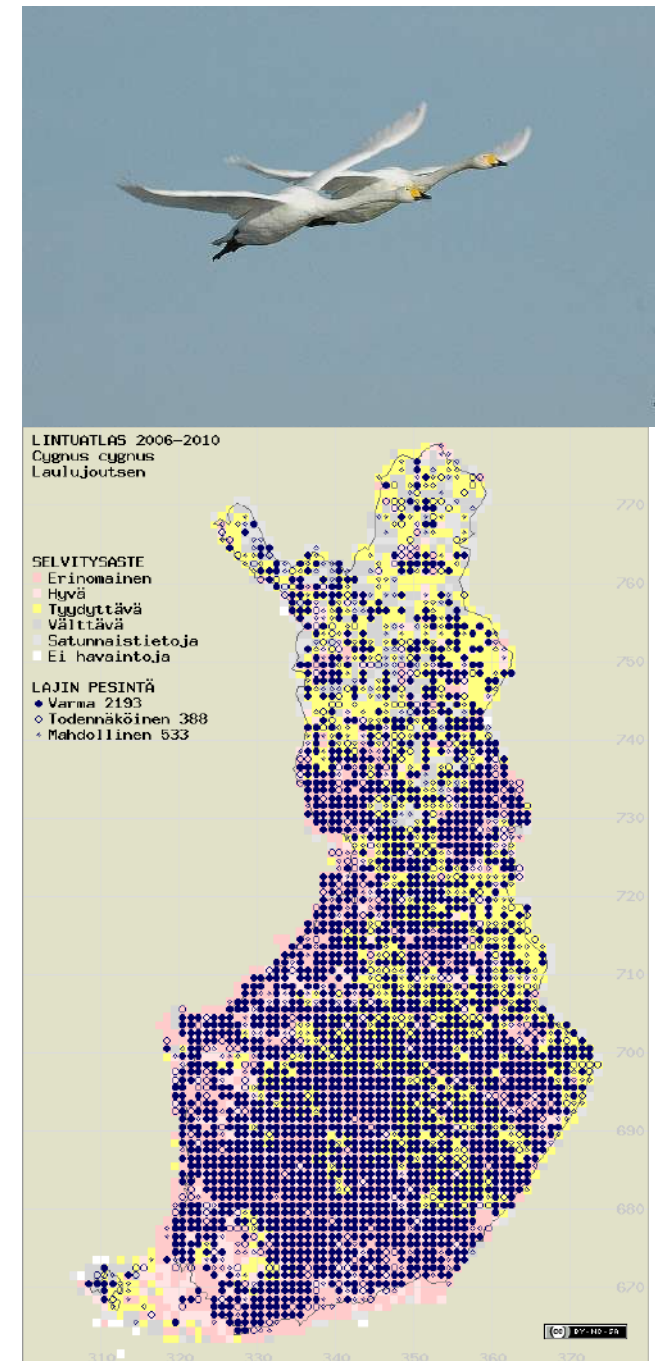
http://atlas3.lintuatlas.fi/

3. Atlas work

- Not abundance data
- Observation effort may be difficult to measure

LINTUATLAS 1974-79/1986-89
Cygnus cygnus
Laulujoutsen

SELVITYSASTE
Erinomainen
Hyvä
Tyydyttävä
Välttävä
Satunnaistietoja
Ei havaintoja

LAJIN PESINTÄ
• Varma 607
◇ Todennäköinen 186
∗ Mahdollinen 428

LINTUATLAS 2006-2010
Cygnus cygnus
Laulujoutsen

SELVITYSASTE
Erinomainen
Hyvä
Tyydyttävä
Välttävä
Satunnaistietoja
Ei havaintoja

LAJIN PESINTÄ
• Varma 2193
◇ Todennäköinen 388
∗ Mahdollinen 533
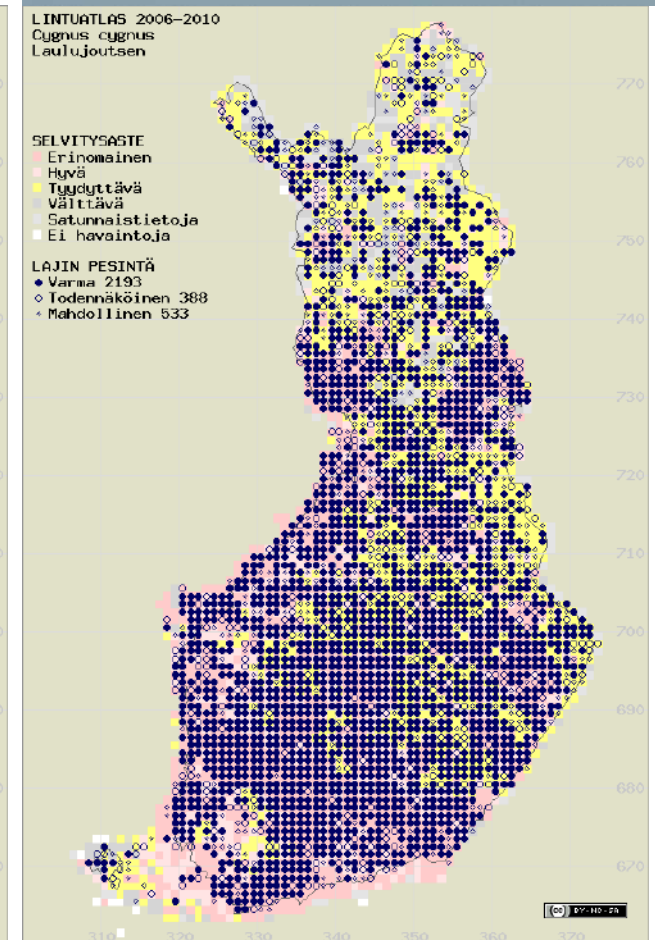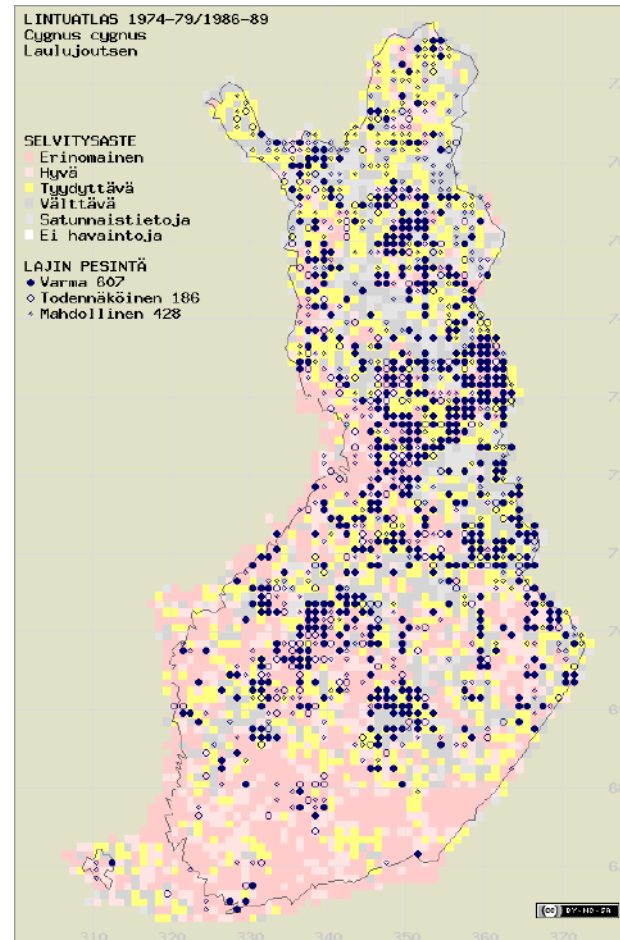
3. Atlas work

- Not abundance data
- Observation effort may be difficult to measure
- **Very very popular!!**
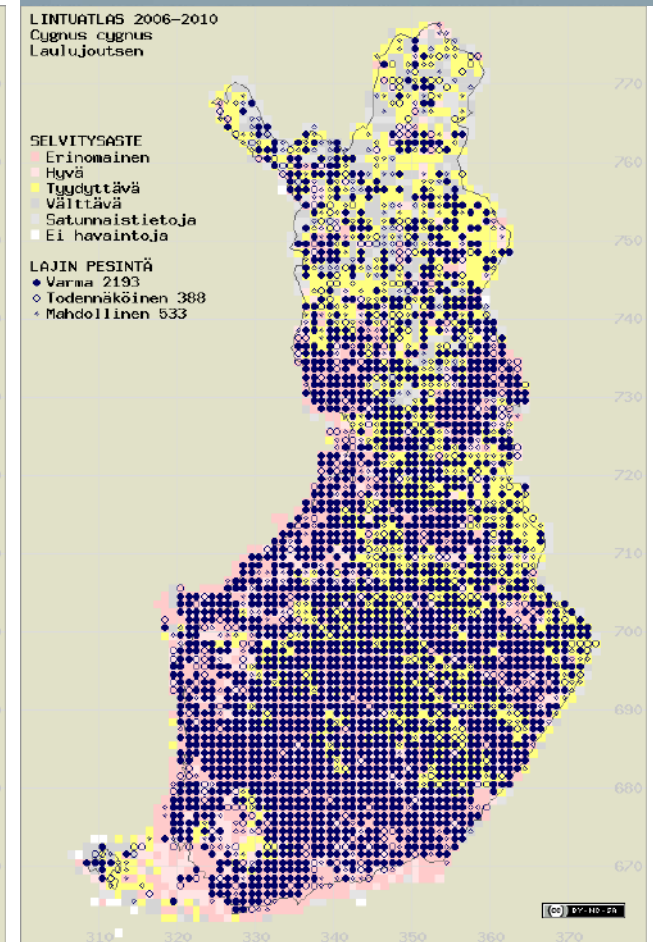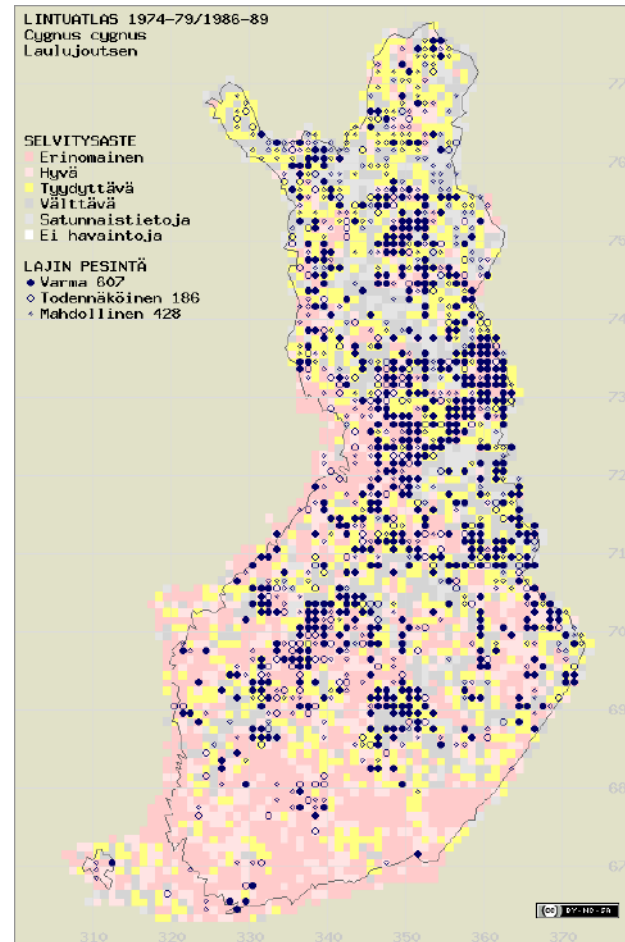
Observer training:

Observer training: Birdin.no

International monitoring networks

- Finnish winter bird counts are part of the International Waterbird Counts (IWC)

-

International monitoring networks

- Finnish winter bird counts are part of the International Waterbird Counts (IWC)

- Wetlands INTERNATIONAL

- IWC are conducted >140 countries

- Largest BD monitoring scheme in globe

International monitoring networks

- Finnish winter bird counts are part of the International Waterbird Counts (IWC)

- Wetlands INTERNATIONAL

- IWC are conducted >140 countries

- Largest BD monitoring scheme in globe

- National and local coordinators (NGOs, Universities, research centres etc)

- IW coordination team

International monitoring networks

- Coordinators meet regularly

International monitoring networks

- Coordinators meet regularly

- Enables large scale studies

Tufted duck, total change 1980-2010

24797 %

190 %

-27 % 98 %

-43 %

20 % (15 %)

(2 %)

-48 % -39 %

Wetlands
INTERNATIONAL
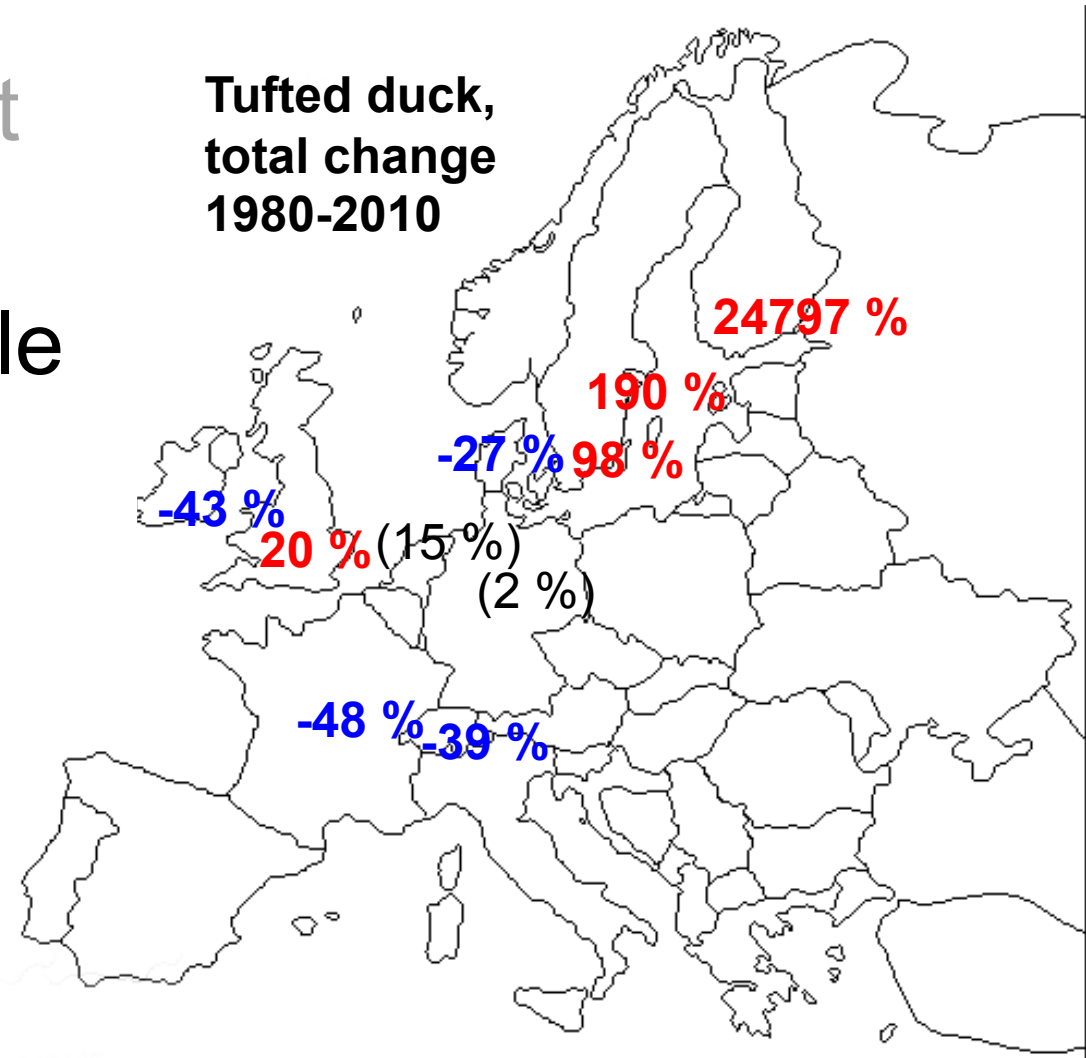
Lehikoinen et al., 2013 Global Change Biol

International monitoring networks

- European Bird Census Council, ebcc.info
- Gathers European census information

International monitoring networks

- European Bird Census Council, ebcc.info
- Gathers European census information
- Provide guidance for monitoring schemes, including softwares
- Capacity building in developing countries

EBCC
European Bird Census Council
every bird counts

International monitoring networks

- European Bird Census Council, ebcc.info
- Gathers European census information
- Provide guidance for monitoring schemes, including softwares
- Capacity building in developing countries
- 2nd European Breeding Bird Atlas

International monitoring networks

- European Bird Census Council, ebcc.info
- Gathers European census information
- Provide guidance for monitoring schemes, including softwares
- Capacity building in developing countries
- 2nd European Breeding Bird Atlas
- **Pan-European Common Bird Monitoring Scheme**

International monitoring networks

- European Bird Census Council, ebcc.info
- Gathers European census information
- Provide guidance for monitoring schemes, including softwares
- Capacity building in developing countries
- 2nd European Breeding Bird Atlas
- Pan-European Common Bird Monitoring Scheme
- Tens of thousands of volunteers

EBCC
European Bird Census Council
every bird counts

International monitoring networks

- Breeding evidence in 50x50 km grids

EBCC
European Bird Census Council
every bird counts

International monitoring networks

- Breeding evidence in 50x50 km grids

- Aggregation of national atlases

International monitoring networks

- Breeding evidence in 50x50 km grids
- Aggregation of national atlases
- 2013-2017
- EU 2020 BD targets

2nd European Breeding Bird Atlas = EBBA2
Black tail Godwit

Abundance (in pairs)
- >100,000
- 10,000–99,999
- 1,000–9,999
- 100–999
- 10–99
- 1–9
- Not reported

©EBCC
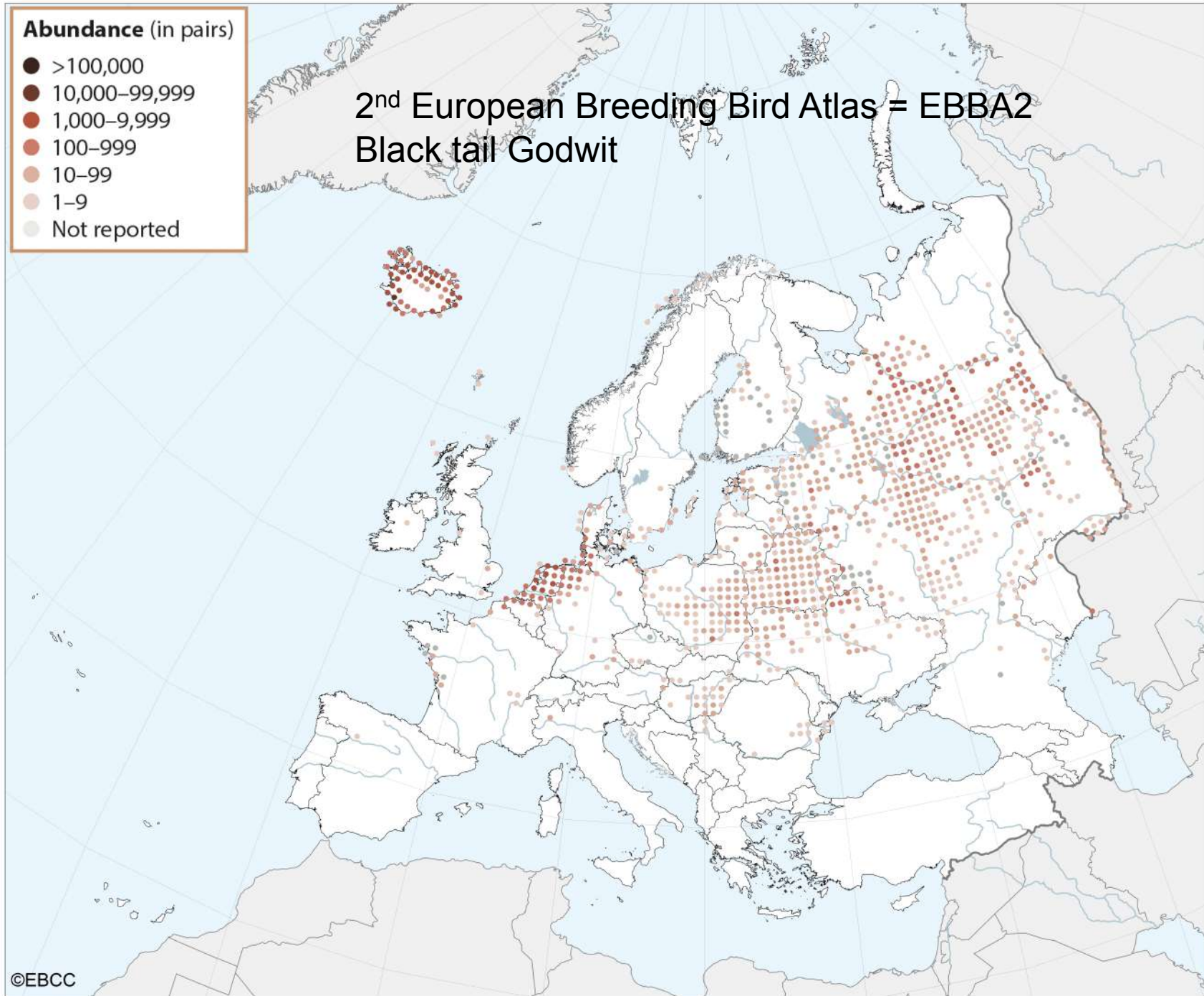
Savi's Warbler

Change
EBBA1
EBBA1 & EBBA2
EBBA2
Light colours:
insufficiently covered
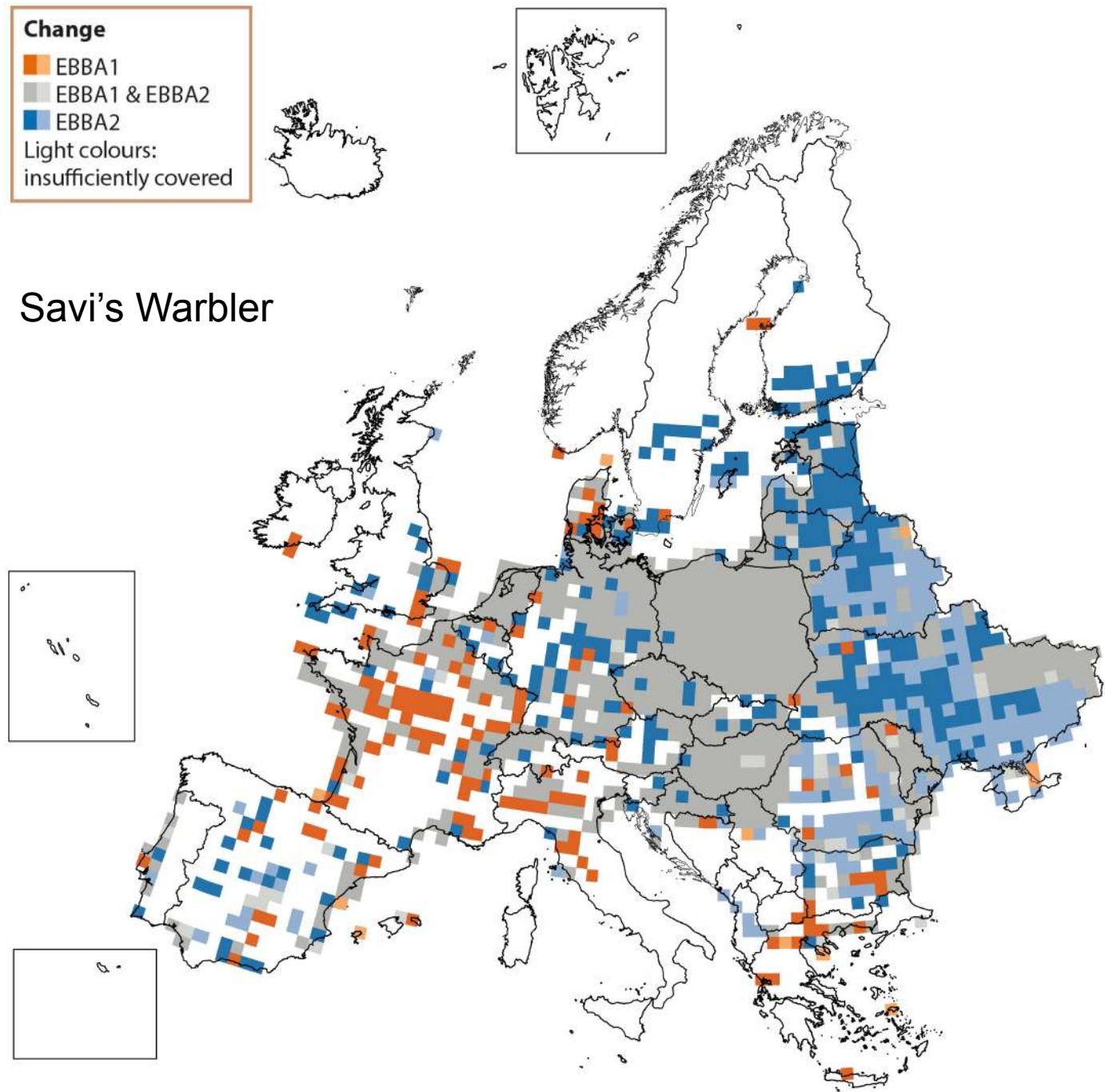
©EBCC

Making citizen science matter

Eurasian Skylark (*Alauda arvensis*)

Population index (%) 1980 - 2015, Europe.
Trend classification: *Moderate decline* (explanation)

List of Countries

Source of the data: EBCC/BirdLife/RSPB/CSO

Alauda arvensis

Source of the data: EBCC/BirdLife/RSPB/CSO
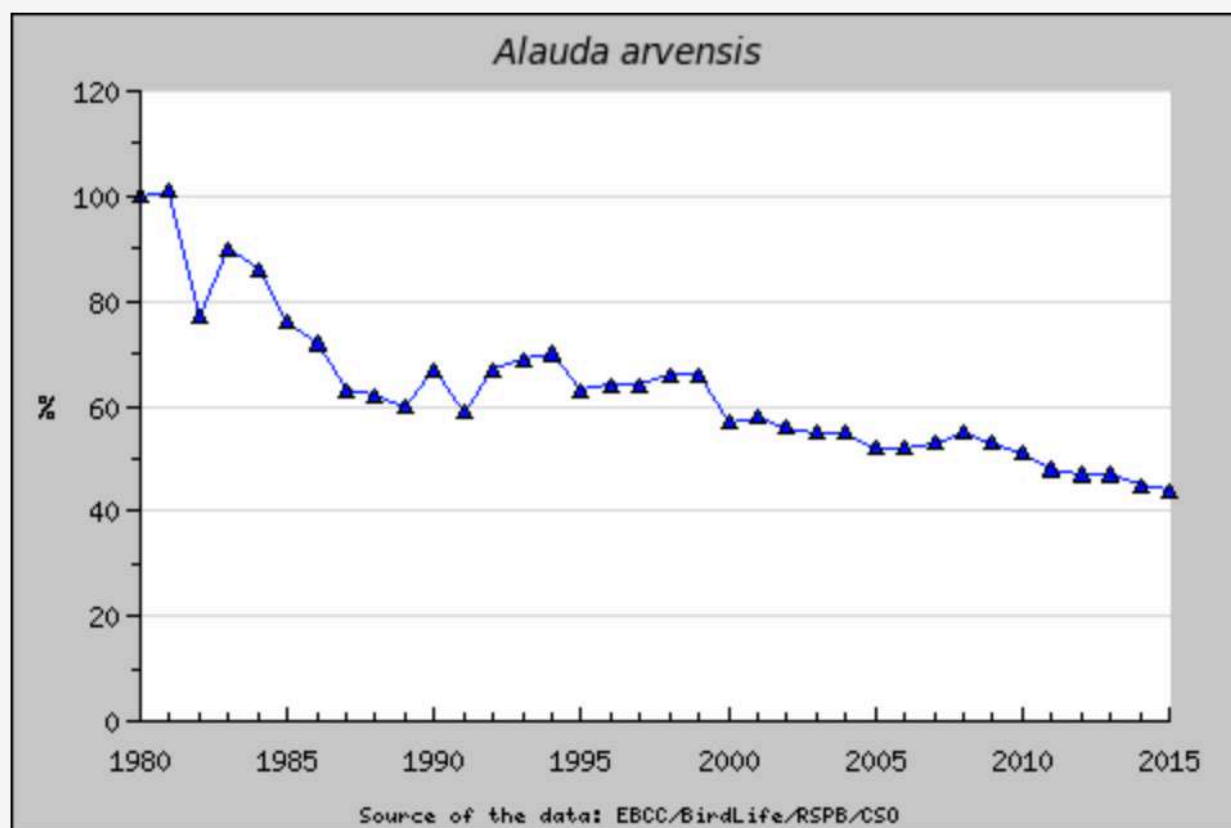
- Population trends of >170 bird species in Europe
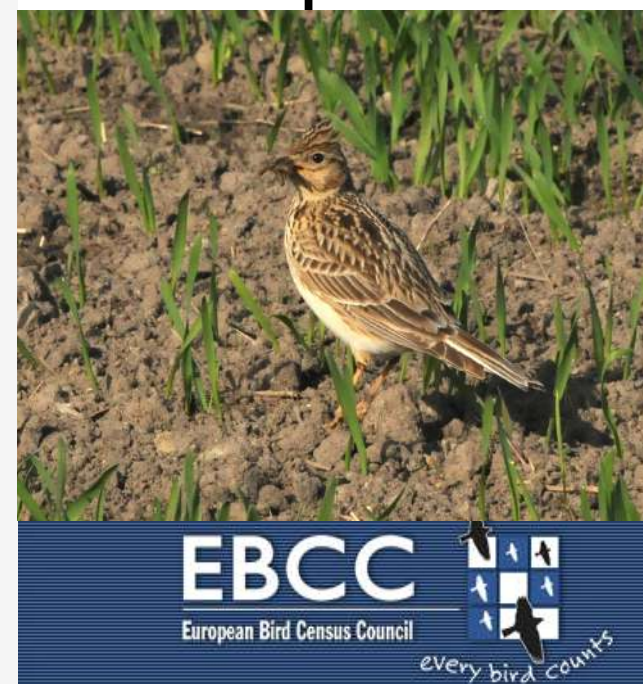
Making citizen science matter
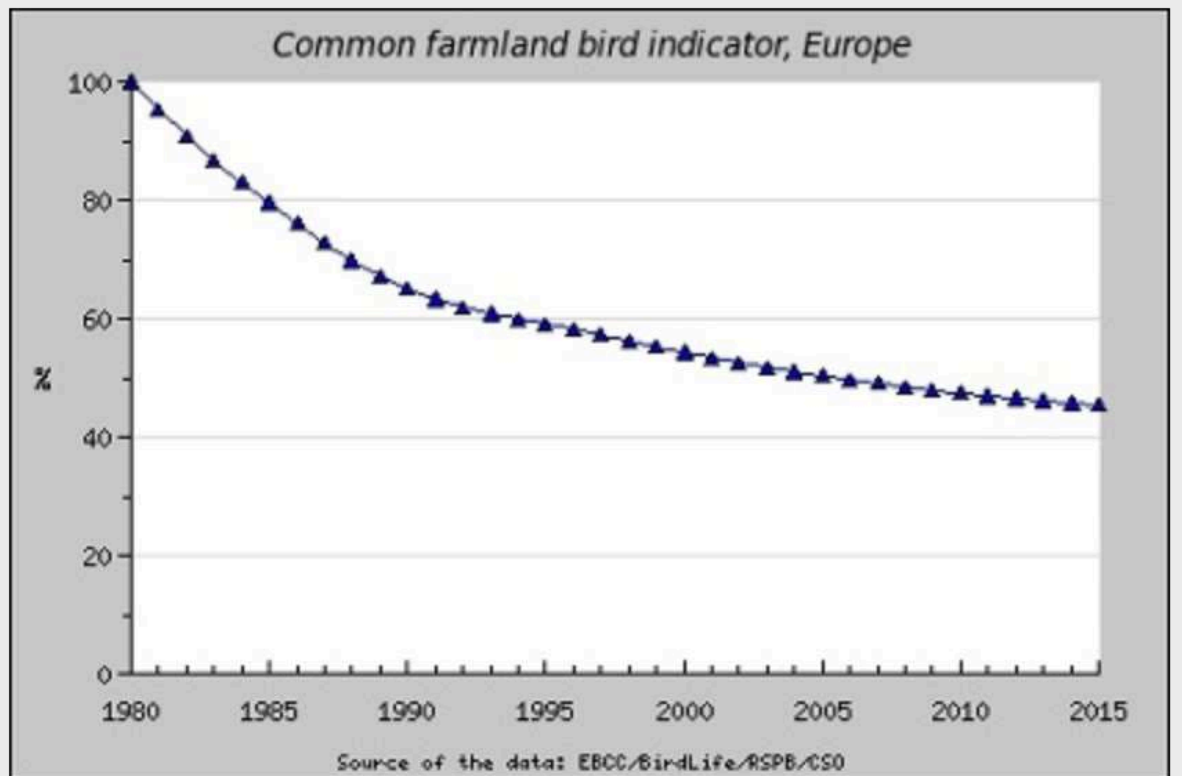
Common farmland bird indicator, Europe

Source of the data: EBCC/BirdLife/RSPB/CSO

Common Farmland Bird Indicator, Europe, 2017 update

- Biodiversity indicators

EBCC
European Bird Census Council
every bird counts

Making citizen science matter

Common Farmland Bird Indicator, Europe, 2017 update
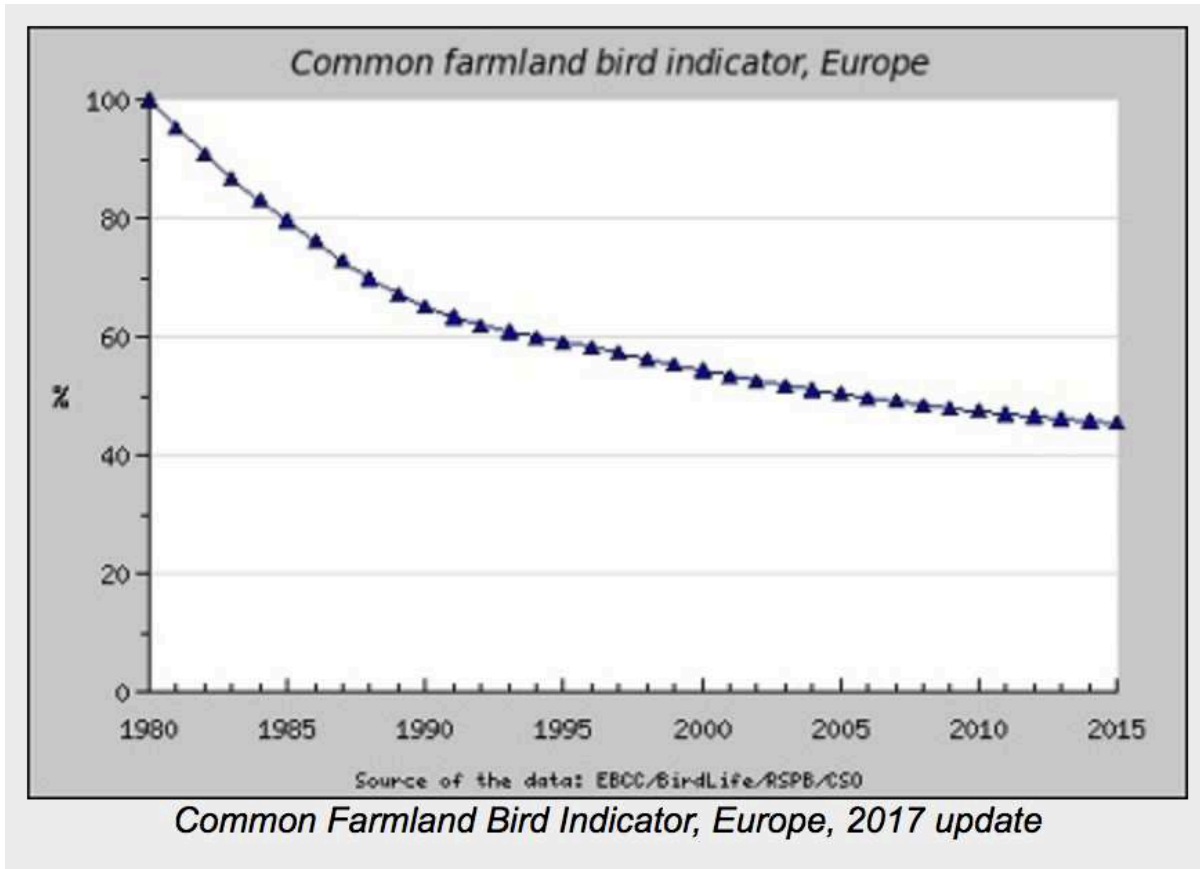
- Biodiversity indicators

- Efficiency of EU farmland policy

Making citizen science matter

Common farmland bird indicator, Europe

Common Farmland Bird Indicator, Europe, 2017 update

Source of the data: EBCC/BirdLife/RSPB/CSO
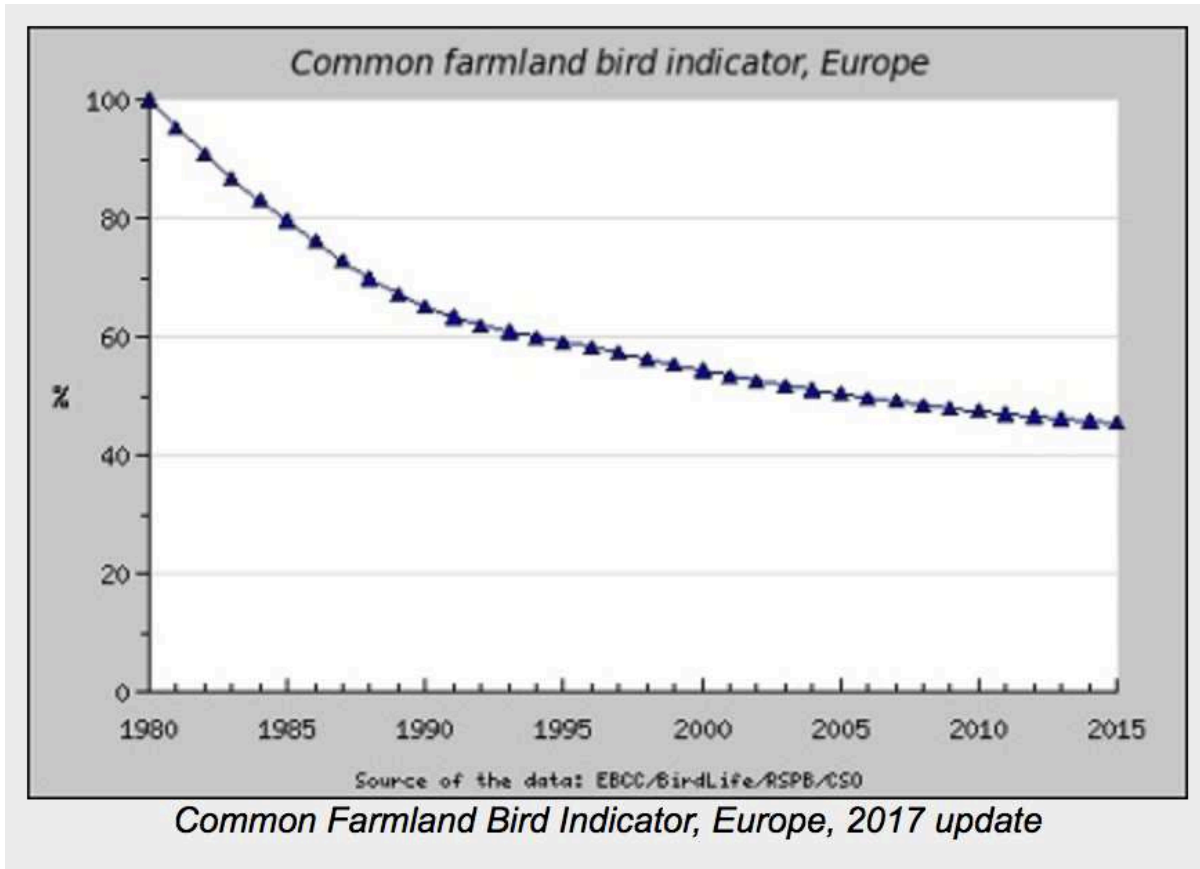
- Biodiversity indicators
- Efficiency of EU farmland policy
- National indicators

Impact of land use changes

- Change in habitat quality
- National habitat specific indicators

Fraixedas Nuñez et al. 2015 J Avian Biology 46: 63

(b) Winter bird trends

Impact of land use changes

- Change in habitat quality
- National habitat specific indicators

Fraixedas Nuñez et al. 2015 J Avian Biology 46: 63

(b) Winter bird trends

Population index

Urban

Forest
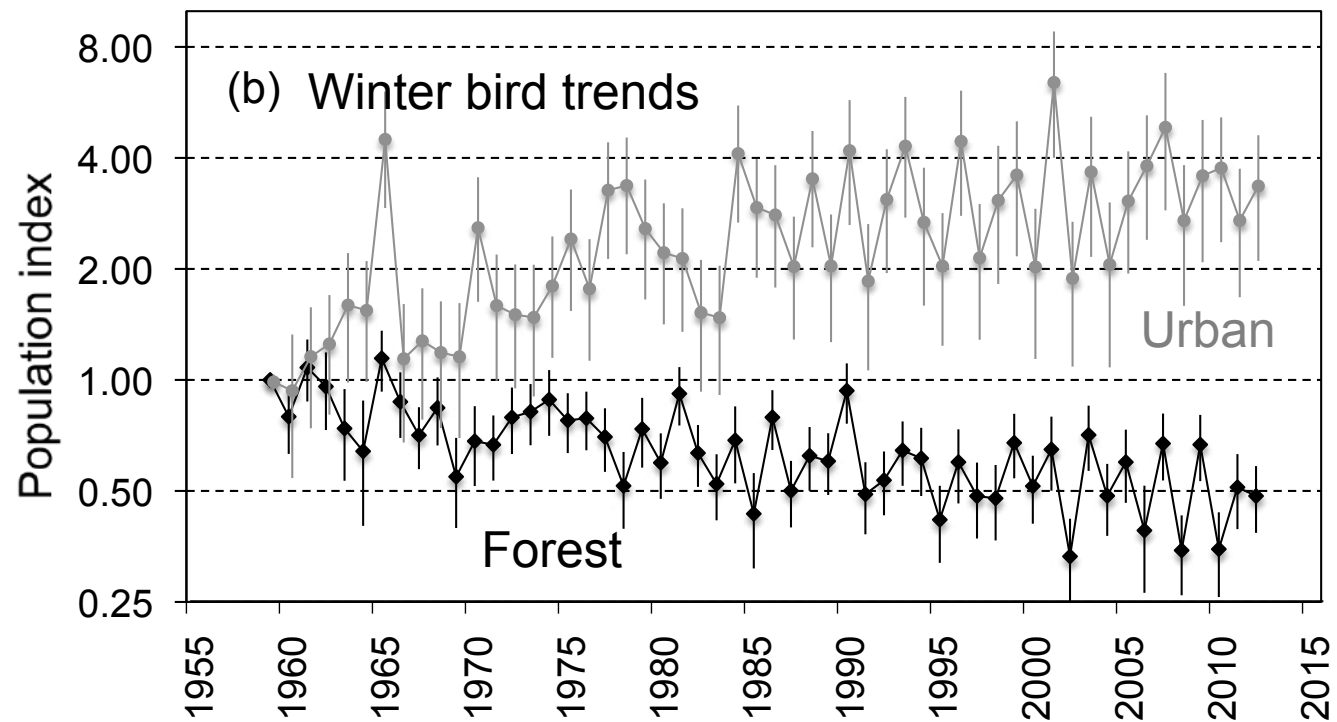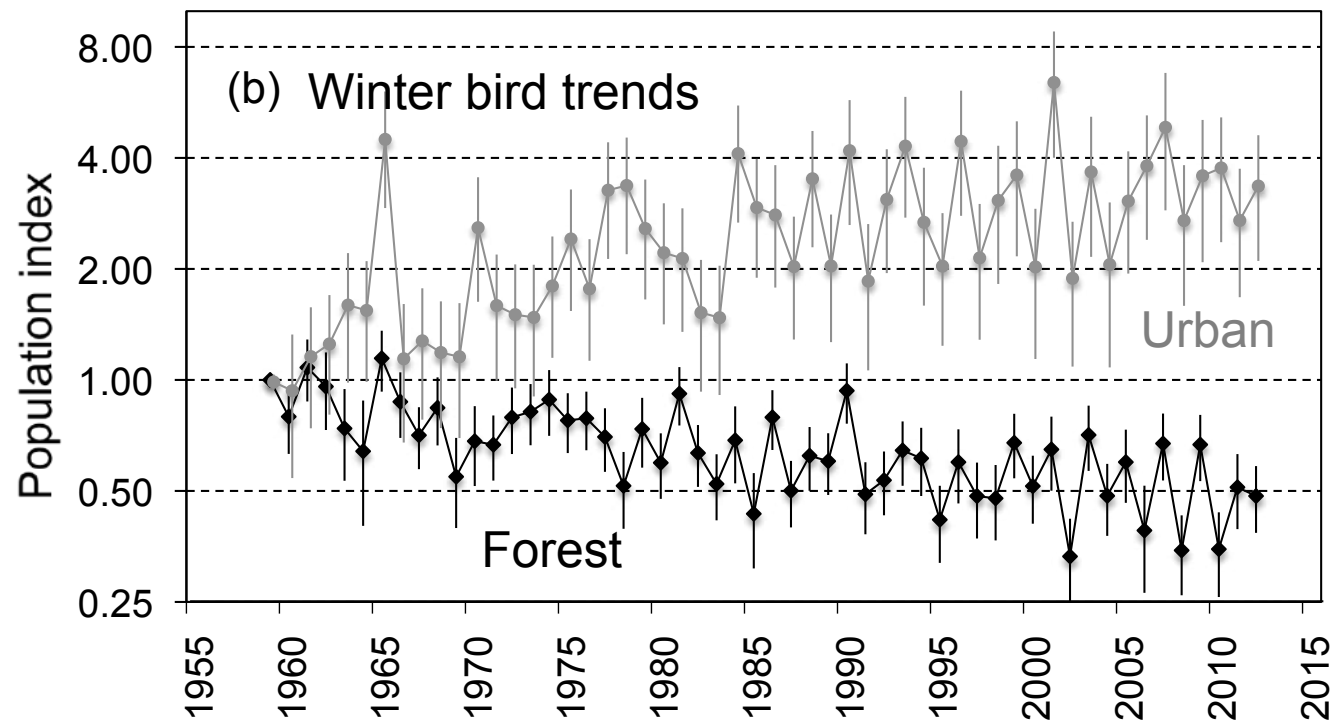
Red listing of Finnish species

The latest published in 2019
punainenkirja.laji.fi

IUCN criteria (vol. 3.1)

- Species listed in categories:
i)   Extinct (EX)
ii) Extinct in the wild (EW)
iii) Critically endangered (CR)
iv) Endangered (EN)
v)   Vulnerable (VU)
vi) Nearly threatened (NT)
vii) Least concern (LC)
viii) Data deficient (DD) (no data)
ix) Not evaluated (NE) (non-native)

IUCN criteria (vol. 3.1)

- Species listed in categories:

i)   Extinct (EX)
ii) Extinct in the wild (EW)
iii) Critically endangered (CR)
iv) Endangered (EN)
v)   Vulnerable (VU)
vi) Nearly threatened (NT)
vii) Least concern (LC)
viii) Data deficient (DD) (no data)
ix) Not evaluated (NE) (non-native)

IUCN criteria (vol. 3.1)

- Species listed in categories:

i)   **Extinct (EX)**
ii) **Extinct in the wild (EW)**
iii) **Critically endangered (CR)**
iv) **Endangered (EN)**
v) **Vulnerable (VU)**
vi) Nearly threatened (NT)
vii) Least concern (LC)
viii)Data deficient (DD) (no data)
ix) Not evaluated (NE) (non-native)

IUCN criteria (vol. 3.1)

- Five main criteria:

A) Decline in population size

B) Small geographical range and fragmented or declining population

C) Small population size and decline

D) Very small population size

E) Quantitative analysis showing probability of extinction

http://www.iucnredlist.org/technical-documents/categories-and-criteria

IUCN criteria (vol. 3.1)

- Five main criteria:

A) Decline in population size

B) Small geographical range and fragmented or declining population

C) Small population size and decline

D) Very small population size

E) Quantitative analysis showing probability of extinction

http://www.iucnredlist.org/technical-documents/categories-and-criteria

IUCN criteria (vol. 3.1)

- Five main criteria:

A) Decline in population size

B) Small geographical range and fragmented or declining population

C) Small population size and decline

D) Very small population size

E) Quantitative analysis showing probability of extinction

http://www.iucnredlist.org/technical-documents/categories-and-criteria

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of
  i) ≥80% in CR,
  ii) ≥50% in EN,
  iii) ≥30% in VU over the last 10 years or three generations, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of
  i) ≥80% in CR,
  ii) ≥50% in EN,
  iii) ≥30% in VU over **the last 10 years or three generations**, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of
  i) ≥80% in CR,
  ii) ≥50% in EN,
  iii) ≥30% in VU over the last 10 years or three generations, **where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible**

A. Decline in population size

- based on (and specifying) any of the following:

(a) direct observation

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced

A. Decline in population size

- based on (and specifying) any of the following:

(a) direct observation

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced

A. Decline in population size

Examples
Ortolan bunting
Peltosirkku

Generation length 3.6 years * 3 = 11 years, e.g. 2006-2017

Decline in breeding counts -80%

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of

  i) ≥80% in Critically endangered (CR)

  ii) ≥50% in Endangered (EN)

  iii) ≥30% in Vulnerable (VU)

  over the last 10 years or three generations, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible

A. Decline in population size

Examples

Willow tit, Hömötiainen

Generation length 4.6 years * 3 = 14 years, e.g. 2003-2017

Decline in breeding counts -53%, winter counts -68%

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of
    i) ≥80% in Critically endangered (CR)
    ii) ≥50% in Endangered (EN)
    iii) ≥30% in Vulnerable (VU)

over the last 10 years or three generations, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible

A. Decline in population size

Examples

Sedge Warbler, Ruokokerttunen

Generation length 3.6 years * 3 = 11 years, e.g. 2006-2017

Decline in breeding counts -22%

A. Decline in population size

- An observed, estimated, inferred or suspected population size reduction of
  - i) ≥80% in Critically endangered (CR)
  - ii) ≥50% in Endangered (EN)
  - iii) ≥30% in Vulnerable (VU)

over the last 10 years or three generations, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible

B. Geographic range

1. Extent of occurrence estimated to be less than 1000 km2 (CR), 5,000 km2 (EN), 20,000 km2 (VU), and estimates indicating at least two of a-c:

a. Severely fragmented or known to exist at no more than five locations.

b. Continuing decline, observed, inferred or projected,

c. Extreme fluctuations

2. Area of occupancy estimated to be less than 10 km2 (CR), 500 km2 (EN), 2000 km2 (VU) and estimates indicating at least two of a-c:

a.   Severely fragmented or known to exist at no more than five locations.

b.   Continuing decline, observed, inferred or projected

c.   Extreme fluctuations

B. Geographic range

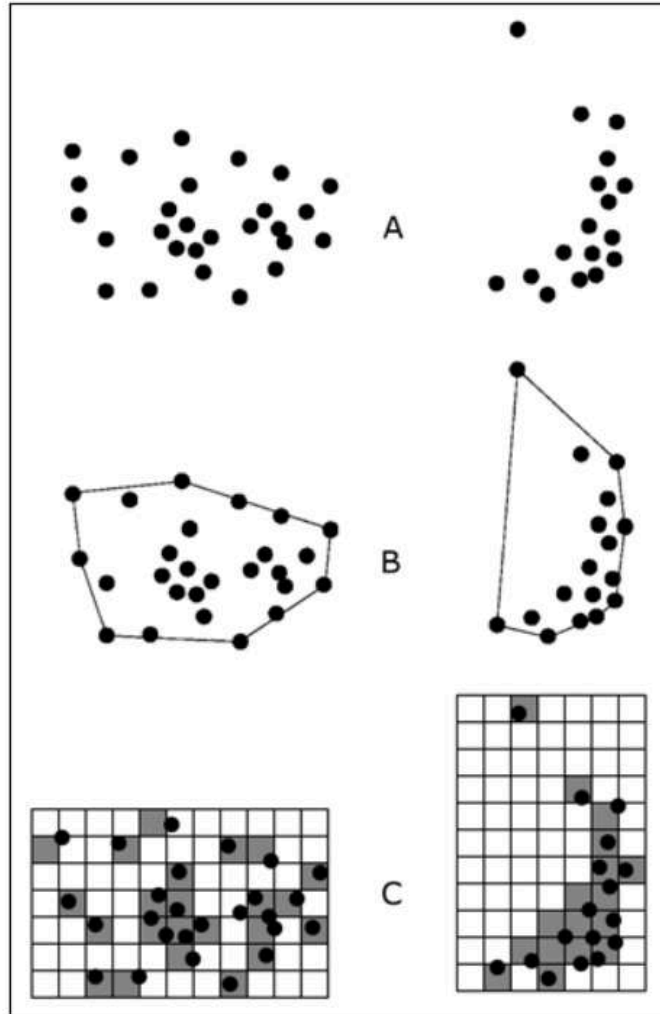**Figure 2.** Two examples of the distinction between extent of occurrence and area of occupancy. (A) is the spatial distribution of known, inferred or projected sites of present occurrence. (B) shows one possible boundary to the extent of occurrence, which is the measured area within this boundary. (C) shows one measure of area of occupancy which can be achieved by the sum of the occupied grid squares.

C. Population size and decline

- C. Population size estimated to number fewer than 250 (CR), 2500 (EN) or 10000 (VU) mature individuals and either:

1. An estimated continuing decline

i) 25% in 3 years/1 generation (CR)

ii) 20% in 5 years/2 generations (EN)

iii) 10 % within certain 10 years/ 3 generations (VU)

OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):

a. Population structure in the form of one of the following: (i) no subpopulation estimated to contain more than 50 mature individuals, OR (ii) at least 90% of mature individuals in one subpopulation.

b. Extreme fluctuations in number of mature individuals.

D. Small population size

- Population size estimated to number fewer than

i)   50 mature individuals (CR)

ii) 250 mature individuals (EN)

iii) 1000 mature individuals (VU)

D. Small population size, **examples**

- Population size estimated to number fewer than

i) 50 mature individuals (CR)

Breeding population less than 25 pairs: very rare breeding species, which have had breeding population for some time:

Greater spotted eagle, snowy owl, black tern, turtle dove, kingfisher

D. Small population size, **examples**

- Population size estimated to number fewer than

i) 50 mature individuals (CR)

Populations recently colonized (edge populations) are upgraded: e.g.

Citril wagtail (->EN), Savi's warbler (->EN)

D. Small population size

- Population size estimated to number fewer than
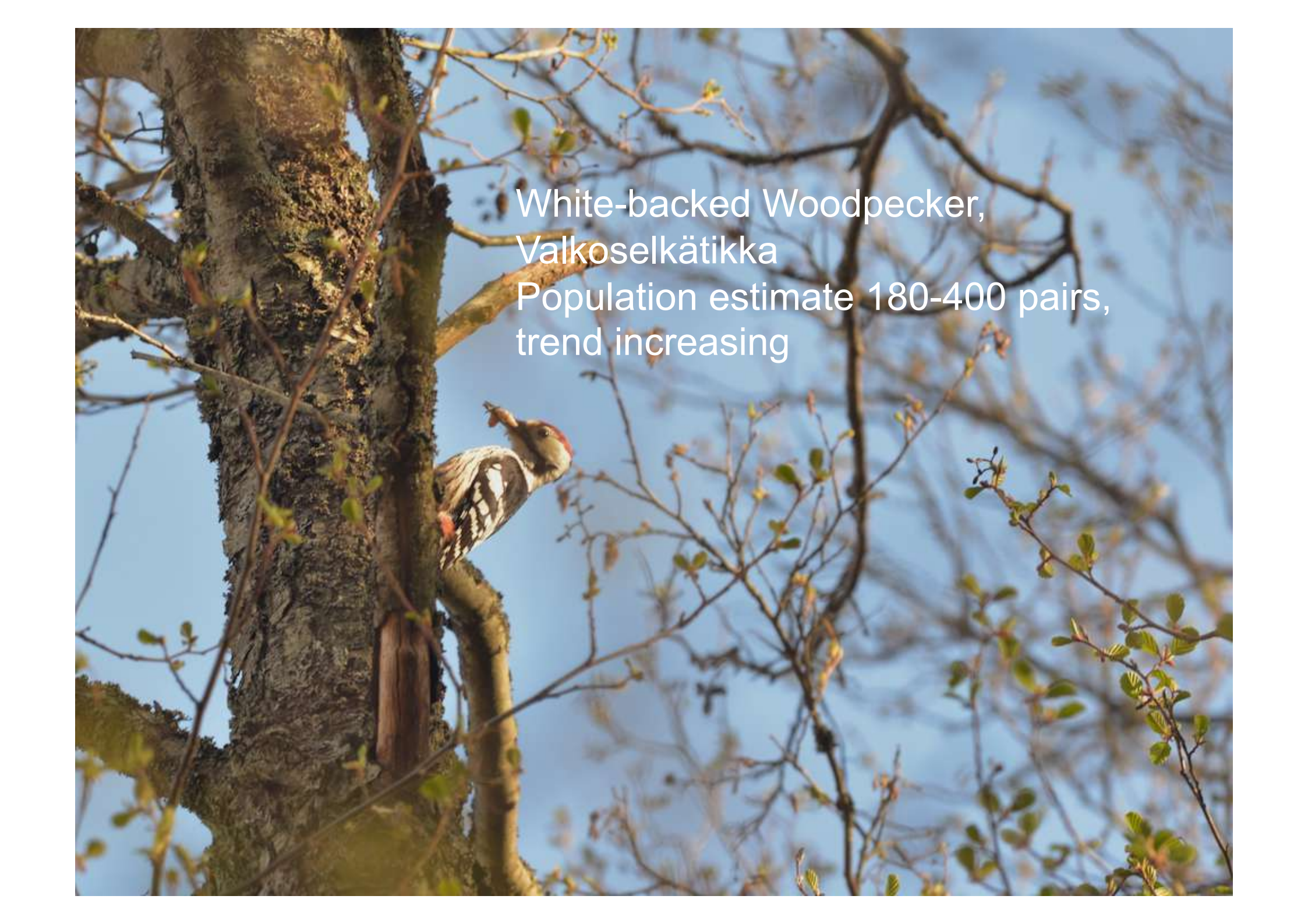
iii) 1000 mature individuals (VU)

Relatively rare species: quail, eagles, moorhen, great reed warbler, barred warbler, bearded tit

Gadwall, Harmaasorsa
Population estimate 700-1500 pairs,
trend increasing

D. Small population size

- Population size estimated to number fewer than

i)   50 mature individuals (CR)

ii) 250 mature individuals (EN)

iii) 1000 mature individuals (VU)

White-backed Woodpecker,
Valkoselkätikka
Population estimate 180-400 pairs,
trend increasing

D. Small population size

- Population size estimated to number fewer than

i) 50 mature individuals (CR)

ii) 250 mature individuals (EN)

iii) 1000 mature individuals (VU)

E. Quantitative analysis

- Quantitative analysis showing the probability of extinction in the wild is

i)   at least 50% within 10 years or three generations (CR)

ii) at least 20% within 20 years or five generations (EN)

iii) at least 10% within 100 years (VU)

Problematic species

- Uncommon species with poor monitoring data: bean goose (VU in 2015), little ringed plover (NT)

- Borderline species e.g. decline 29-31%

- Contrasting data: one show clear decline other not.

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators
- Many ways to encourage volunteers

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators
- Many ways to encourage volunteers
- Feedback on multiple levels important

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators
- Many ways to encourage volunteers
- Feedback on multiple levels important
- Strength of international networks

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators
- Many ways to encourage volunteers
- Feedback on multiple levels important
- Strength of international networks
- Societal importance inc. Redlisting

Take home messages

- Common Bird Monitoring is a key example of long-term citizen science
- Importance of national coordinators
- Many ways to encourage volunteers
- Feedback on multiple levels important
- Strength of international networks
- Societal importance inc. Redlisting
- Every bird counts!

Thank you!

LUOMUS
LUONNONTIETEELLINEN KESKUSMUSEO
NATURHISTORISKA CENTRALMUSEET
FINNISH MUSEUM OF NATURAL HISTORY

Wetlands
INTERNATIONAL

HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

EBCC
European Bird Census Council
every bird counts