

# The rise and fall of coniferous forest birds in Belgium



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LifeWatch Biodiversity Day - Habitat mapping – 26 January 2023

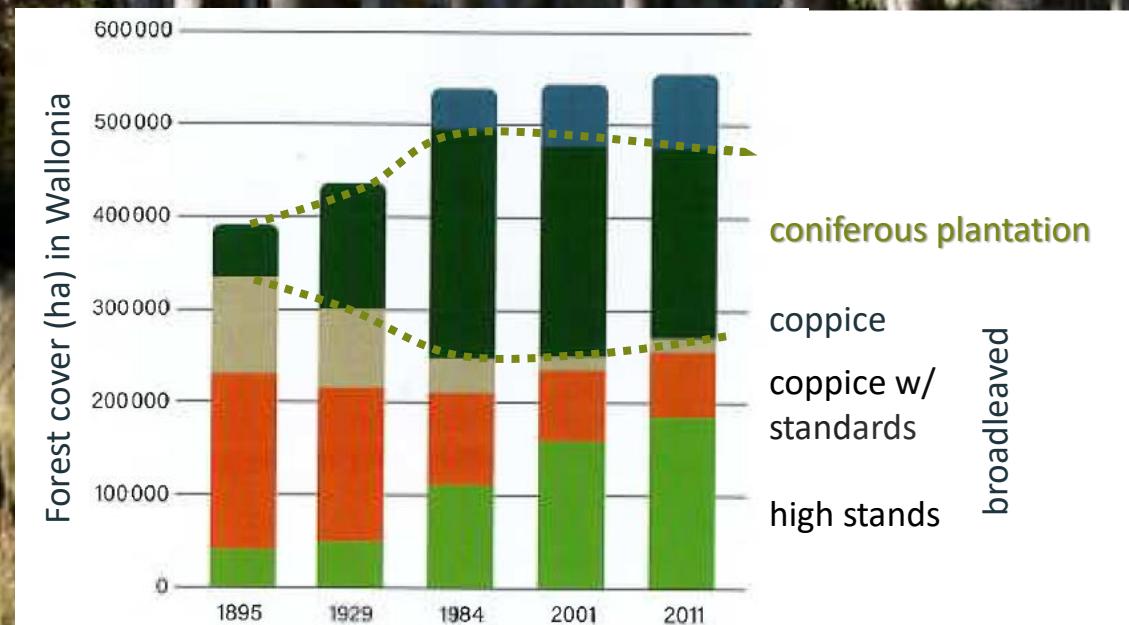
Jean-Yves Paquet

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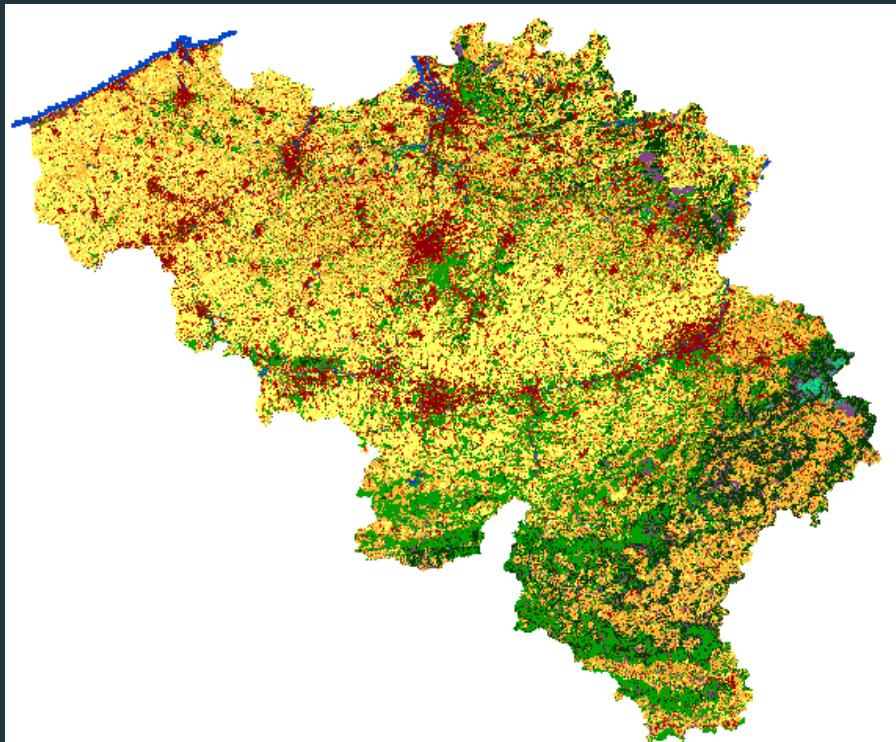
With the collaboration of Antoine Derouaux, Marc Herremans & Glenn Vermeersch and many volunteer birdwatchers

Natagora / Natuurpunt Studie / INBO Research Institute Nature and Forest

# Coniferous plantation is an important feature of the Belgian landscape since the 19<sup>th</sup> Century



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	Total Forest cover	Coniferous ratio	Dominant species
Flanders	11 %	≈ 45%	Scots Pine
Wallonia	33 %	≈ 45%	Norway Spruce



# Coniferous specialists progressively colonized Belgium

Siskin *Spinus spinus* 1842

Goldcrest & Crested Tit

Mid-19<sup>th</sup> c. *Regulus regulus* *Lophophanes cristatus*

Coal Tit *Periparus ater* 1861

Common Crossbill  
*Loxia curvirostra*

End-19<sup>th</sup> c.

1882 Black Woodpecker *Dryocopus martius*

1901 Ring Ouzel *Turdus torquatus*

Firecrest 1916  
*Regulus ignicapillus*

Tengmalm's Owl  
*Aegolius funereus*

1963

Nutcracker 1975  
*Nucifraga caryocatactes*

Pygmy Owl

*Glaucidium passerinum*  
2012



© S Peten

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# The rise and fall of coniferous specialists

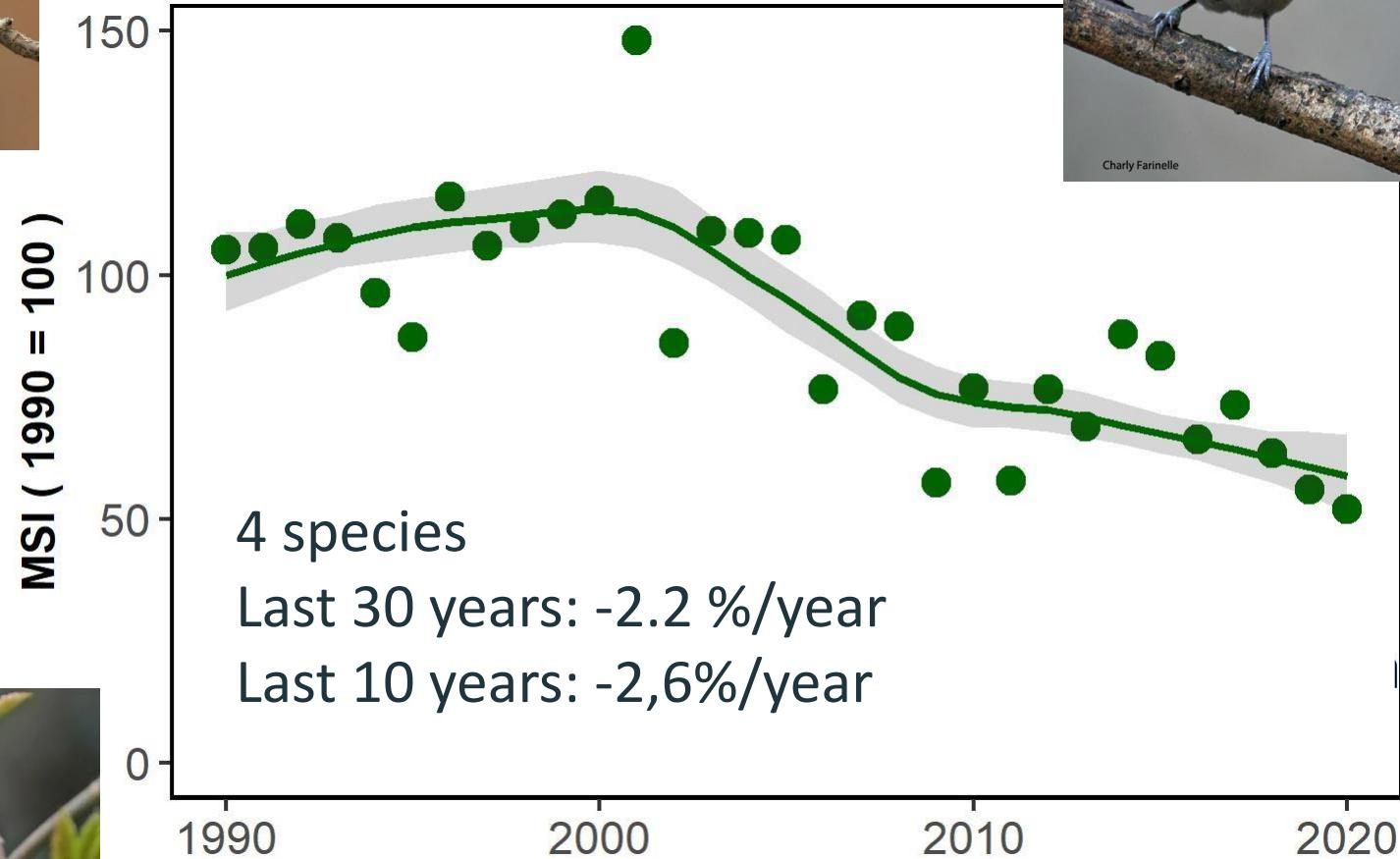
Article 12 reporting, period 2013-2018, Belgium

	Population	Trend 1973-2018 (range)	Trend 2008-2018 (population)
Pygmy Owl <i>Glaucidium passerinum</i>	1-6 pairs	new	new
Ring Ouzel <i>Turdus torquatus</i>	1-10 pairs	=	=
Tengmalm's Owl <i>Aegolius funereus</i>	1-40 pairs	↑	fluctuating
Nutcracker <i>Nucifraga caryocatactes</i>	250-500 pairs	↑	unknown
Siskin <i>Spinus spinus</i>	250-620 pairs	↑	fluctuating
Black Woodpecker <i>Dryocopus martius</i>	1400-2500 pairs	↑	=
Common Crossbill <i>Loxia curvirostra</i>	1800-4300 pairs	fluctuating	fluctuating
Crested Tit <i>Lophophanes cristatus</i>	9700-29300 pairs	↑	↓
Coal Tit <i>Periparus ater</i>	30600-66200 pairs	↑	=
Firecrest <i>Regulus ignicapilla</i>	43800-66200 pairs	↑	↓
Goldcrest <i>Regulus regulus</i>	50100-77700 pairs	=	↓

# The rise and fall of coniferous specialists

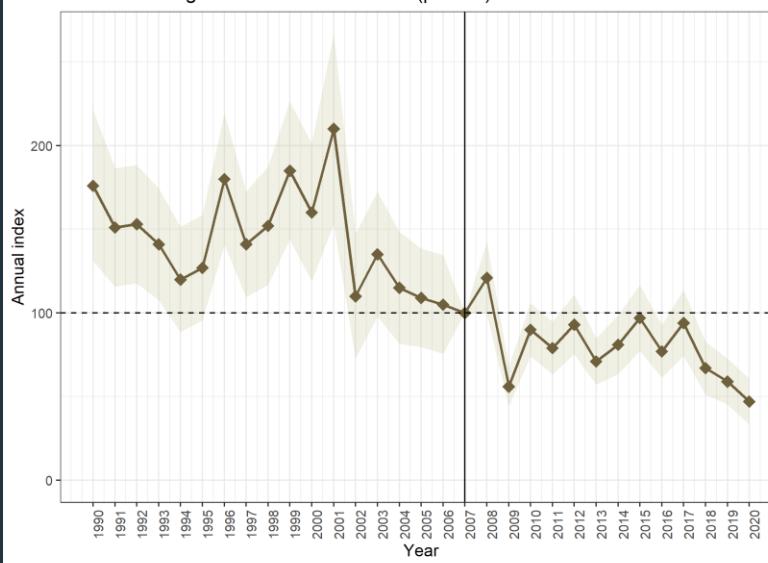


Coniferous bird multispecies indicator (Wallonia)

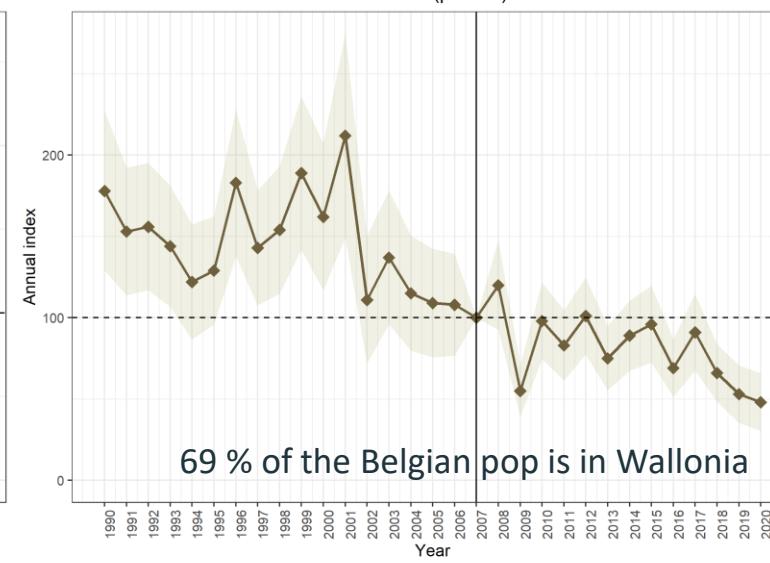


Charly Farinelle

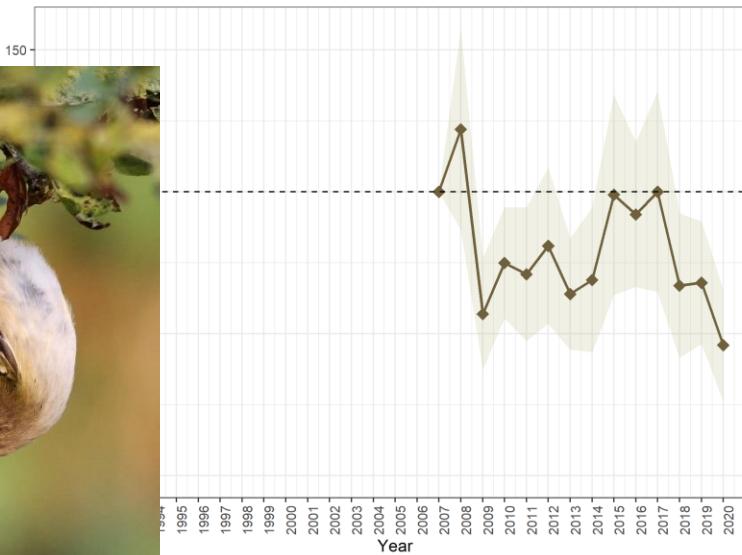
Goldcrest Belgium Moderate decrease ( $p<0.01$ )



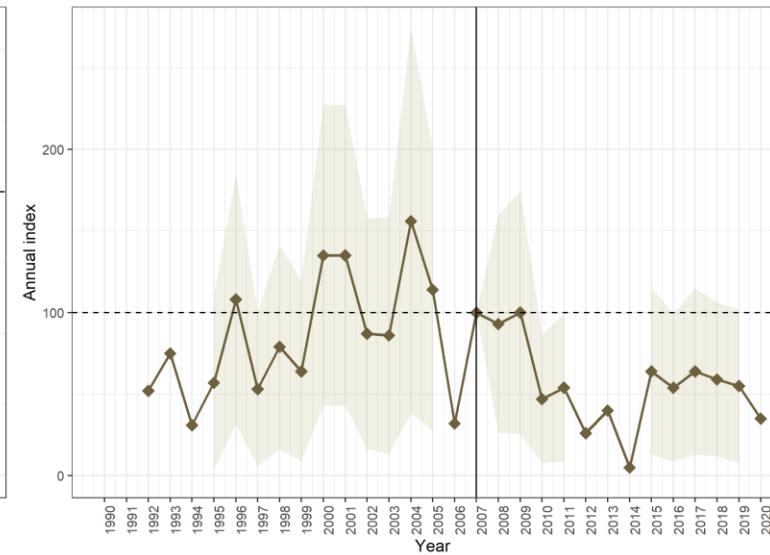
Goldcrest Wallonia Moderate decrease ( $p<0.01$ )



Goldcrest Flanders Moderate decrease ( $p<0.05$ )



Goldcrest Brussels Moderate decrease ( $p<0.05$ )



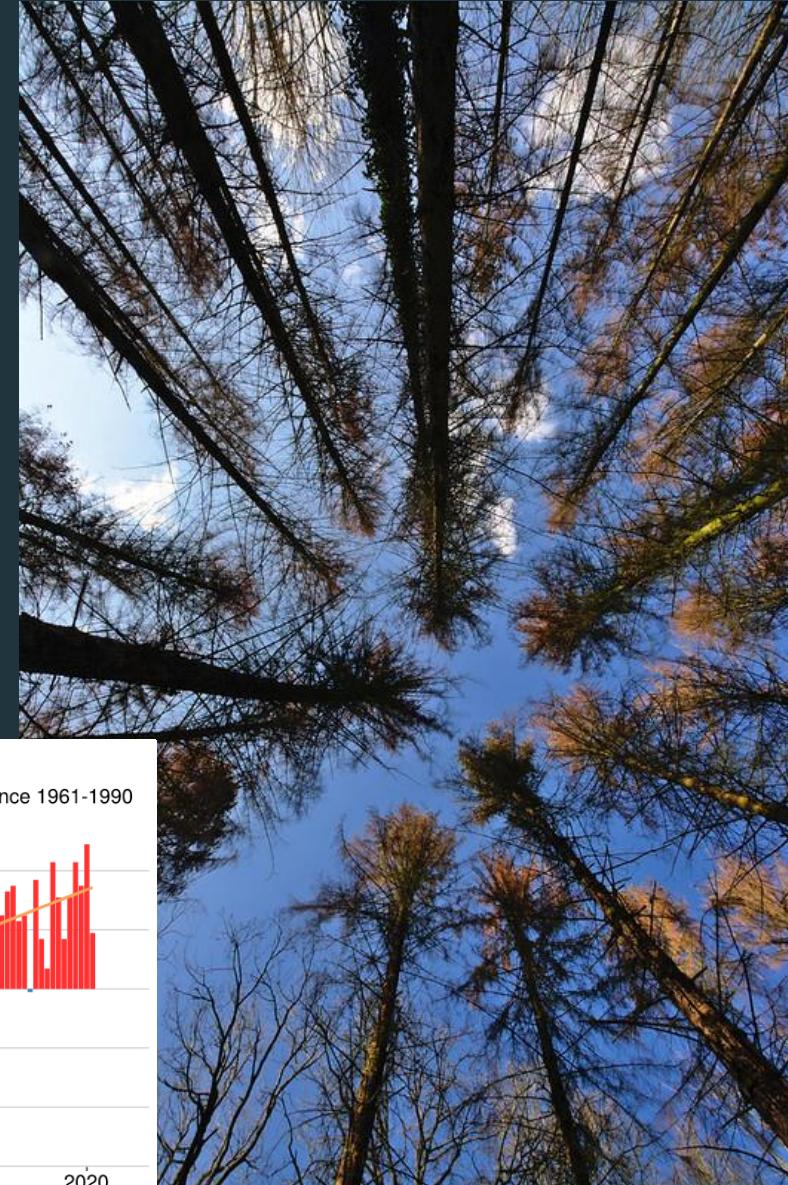
# What are the drivers of this change ?

Decrease in coniferous stand cover ?

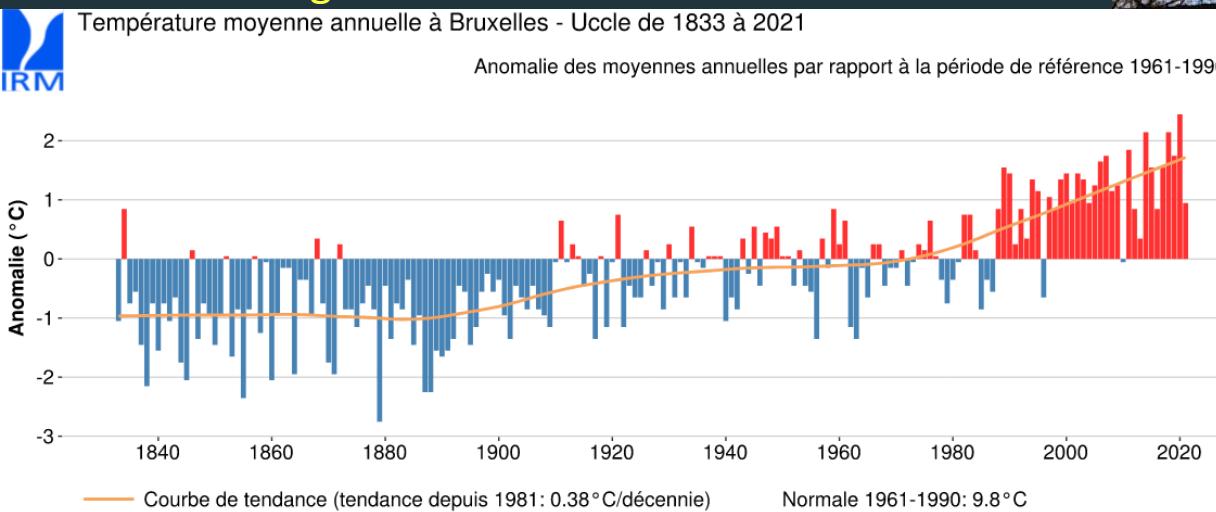


© métaprojet LIFE tourbière

Bark Beetle outbreaks ?



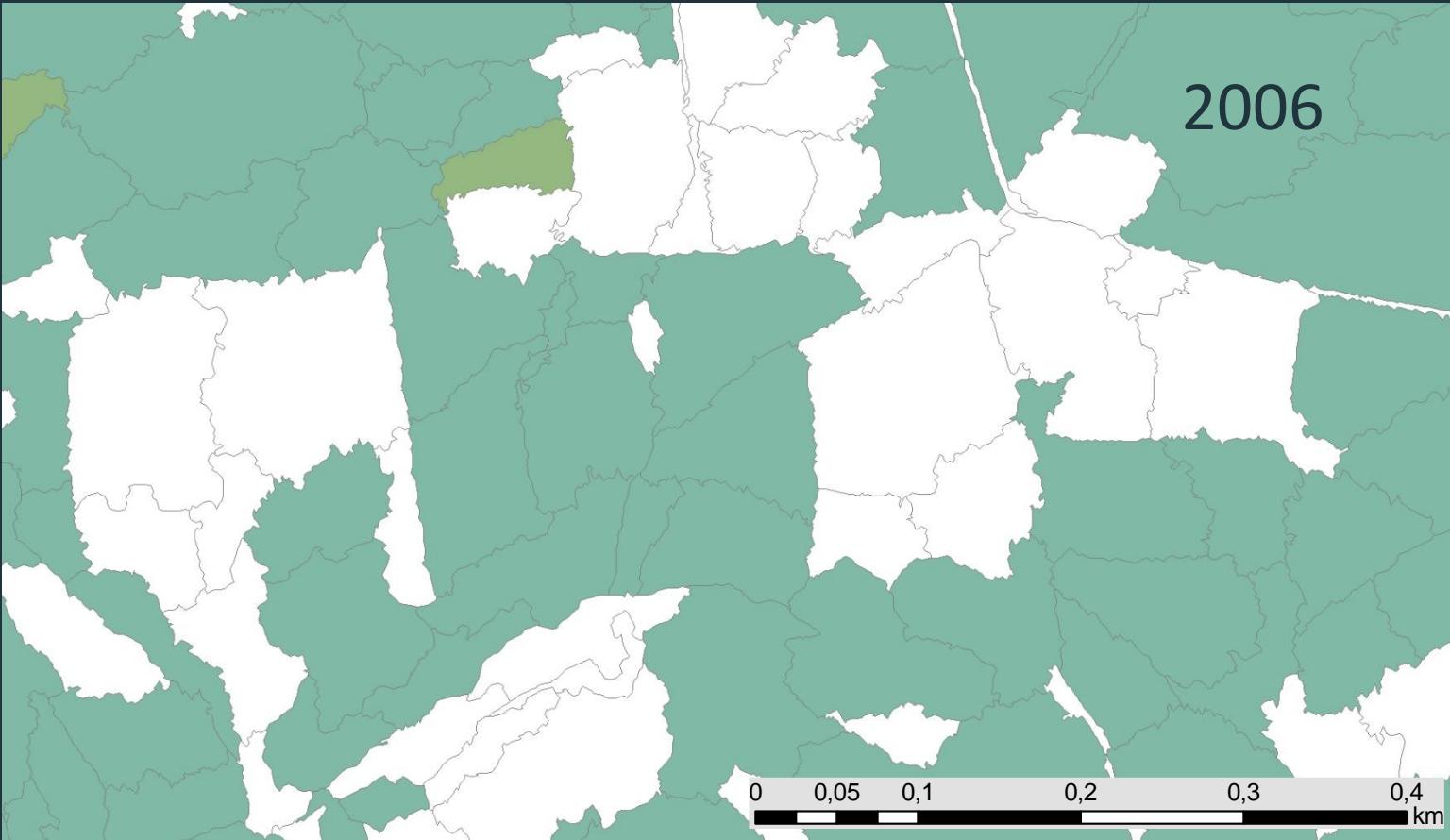
Climate change ?



© Gilles San Martin

# Decrease in coniferous stand cover

Remote sensing data

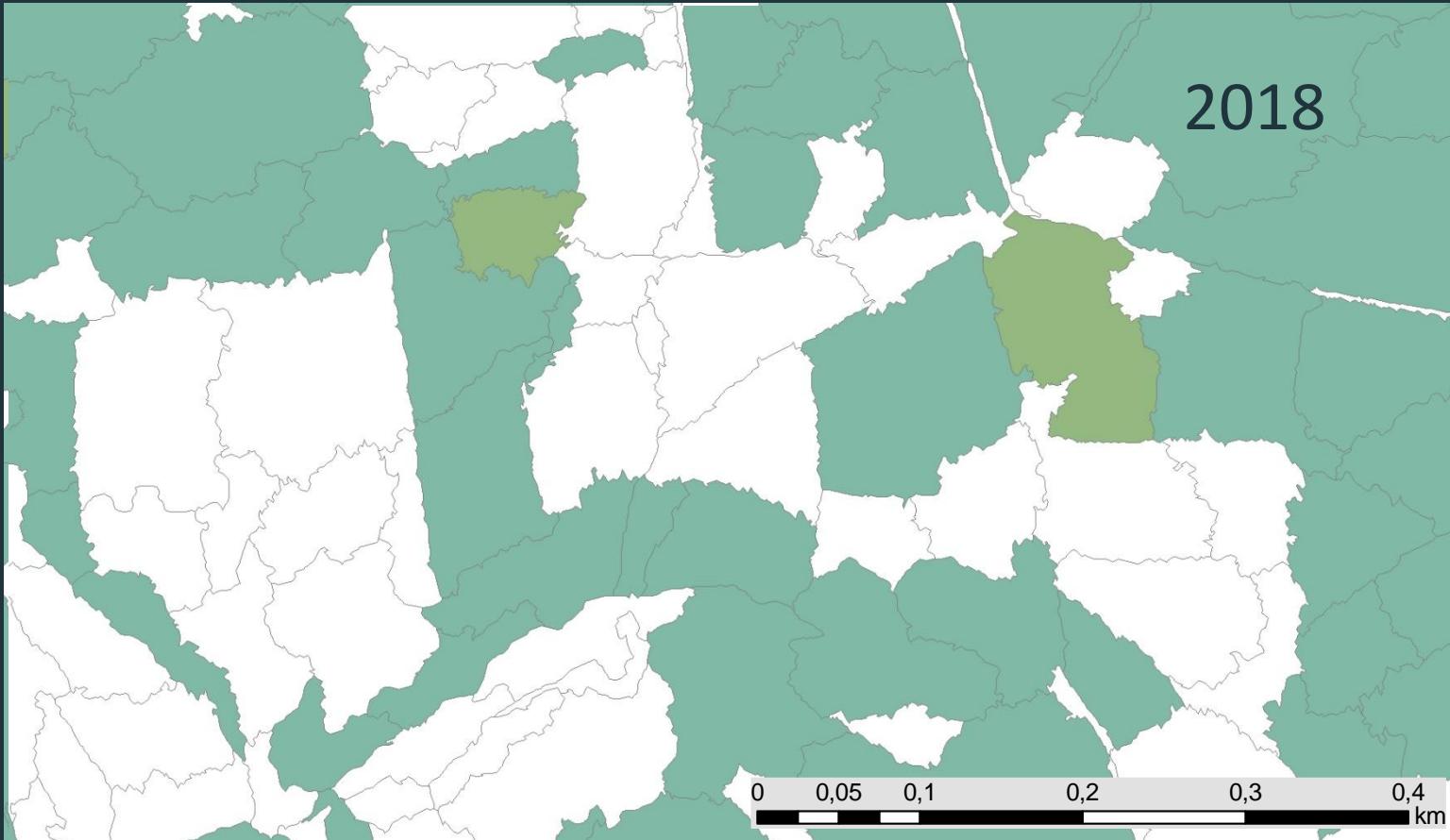


<http://maps.elie.ucl.ac.be/lifewatch/geoviewer.html>

## Decrease in coniferous stand cover

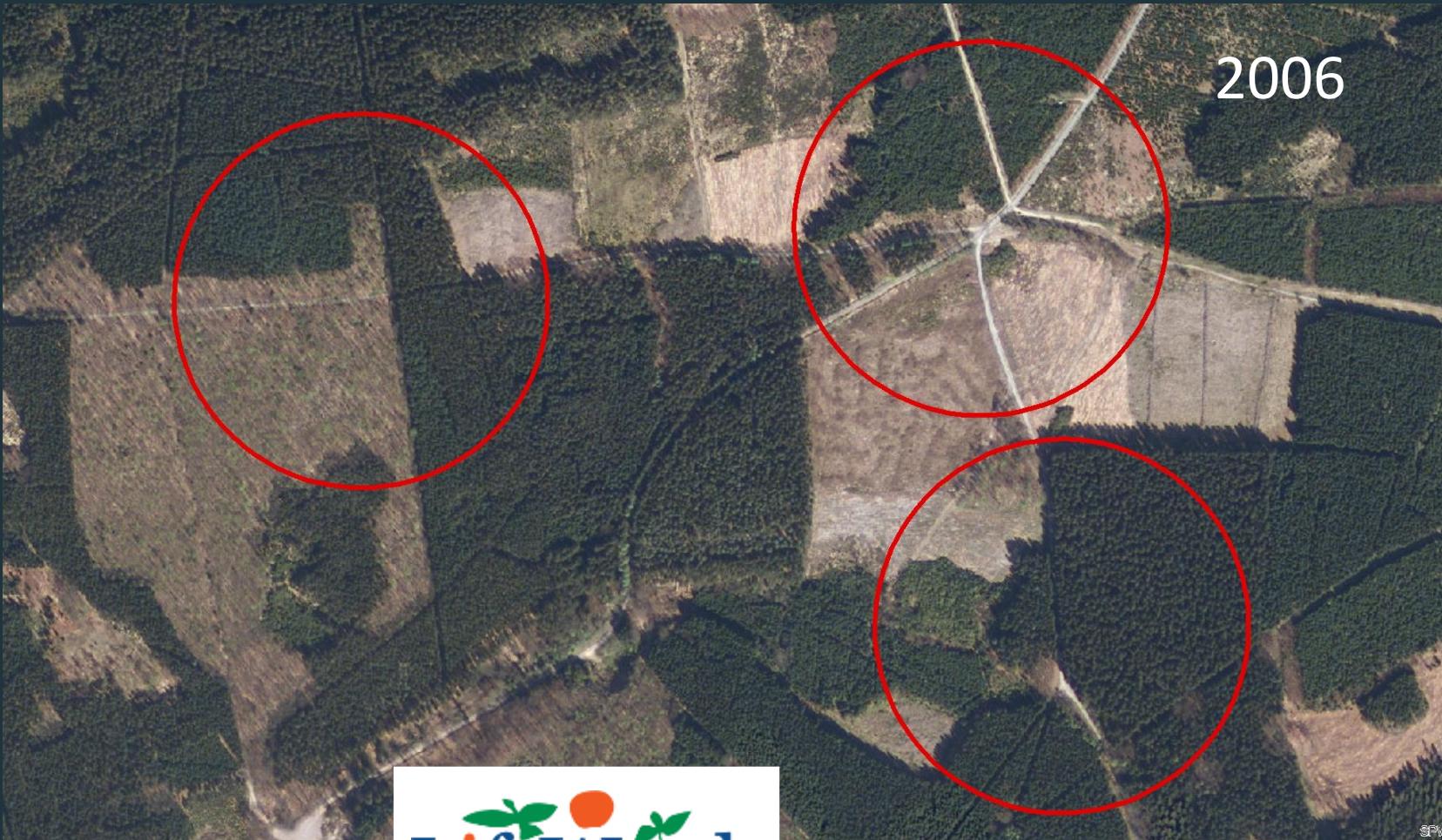
Remote sensing data

2006 vs 2018 : 7.3% decrease in coniferous cover



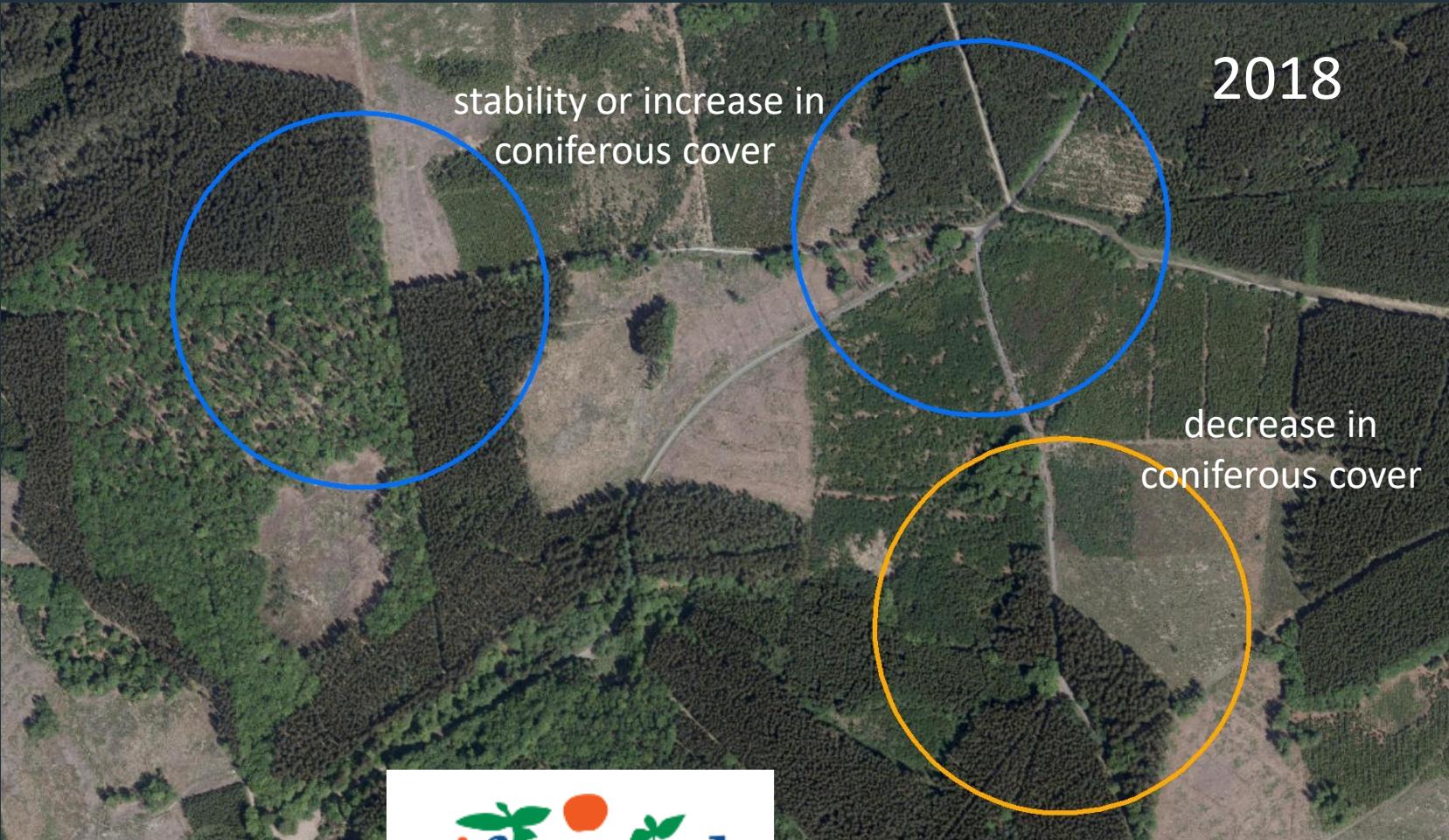
## Decrease in coniferous stand cover

Definition of covariable for sampling point: with or without loss of coniferous cover



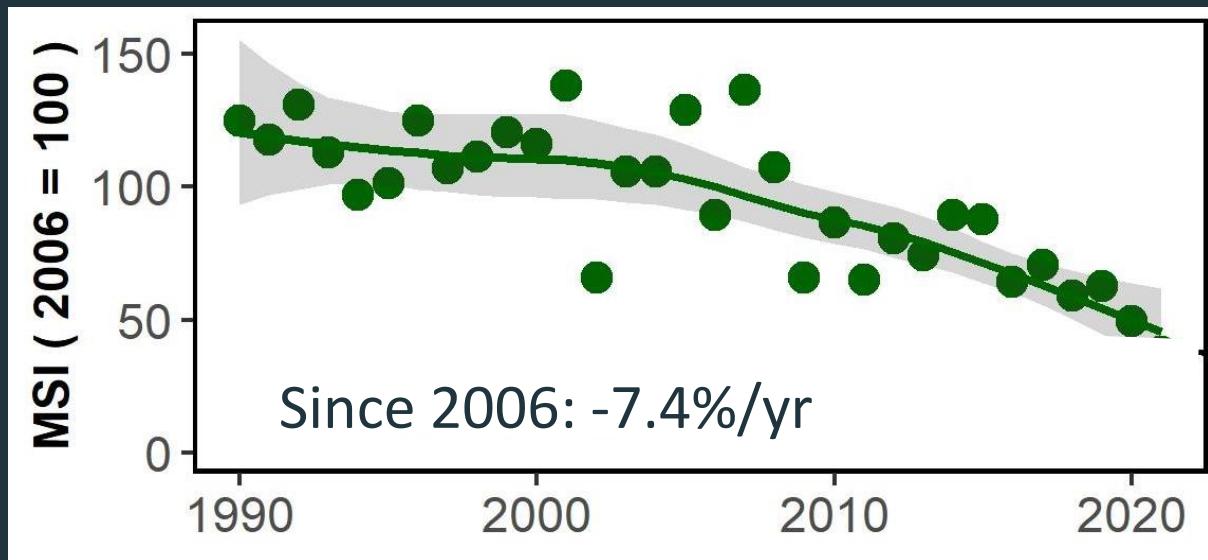
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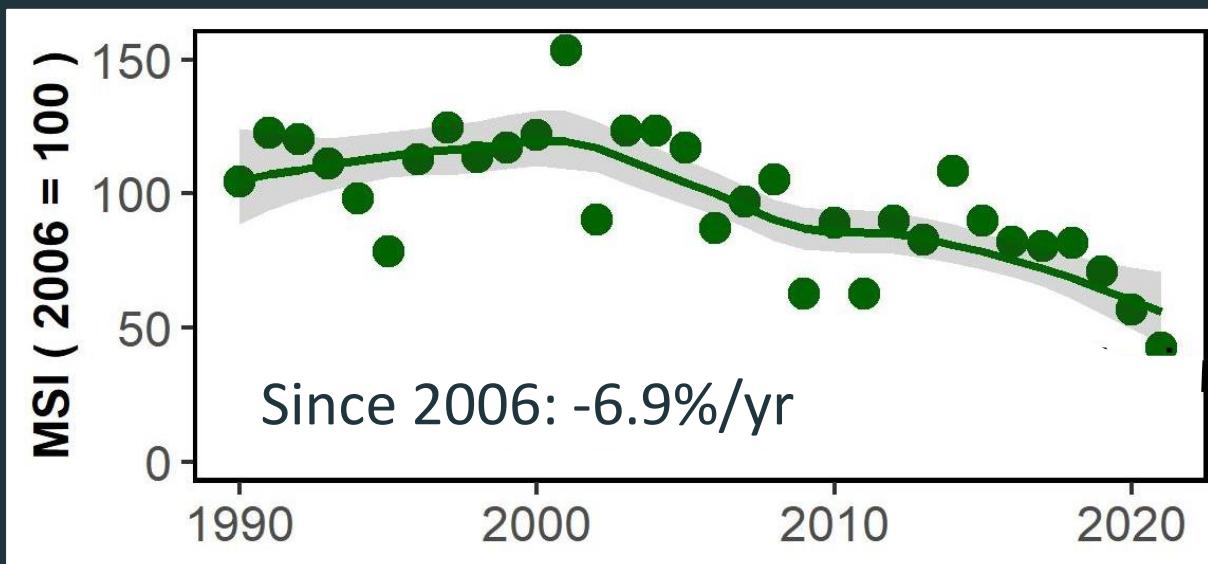


## Coniferous bird indicator

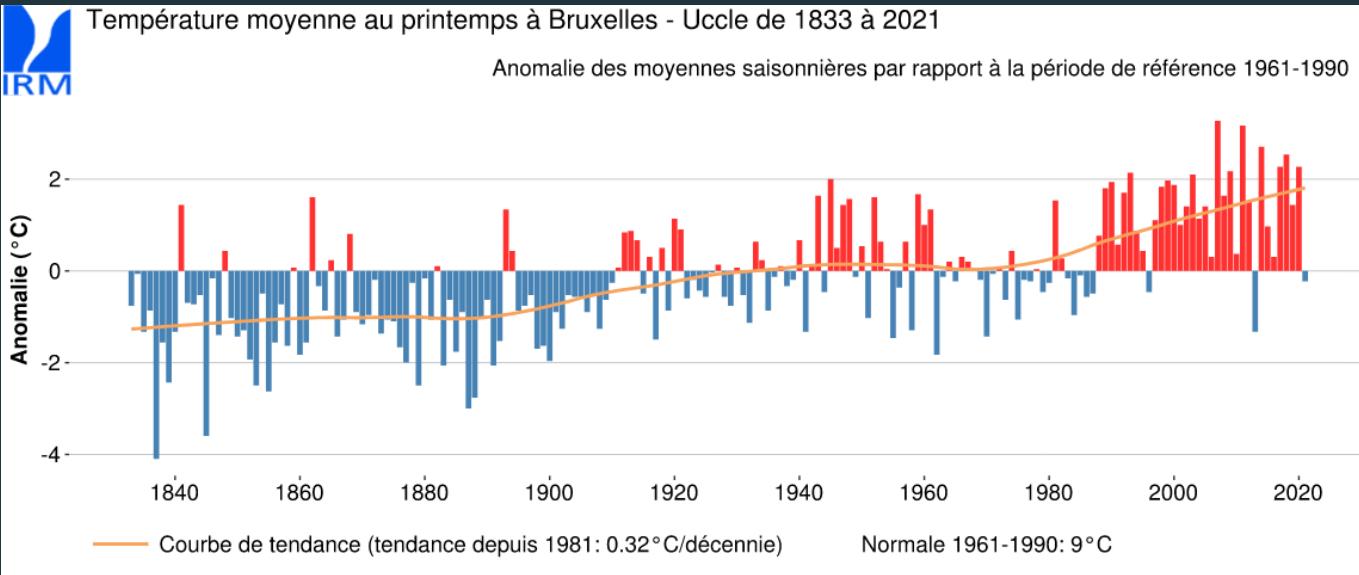
where there is a decrease in coniferous cover



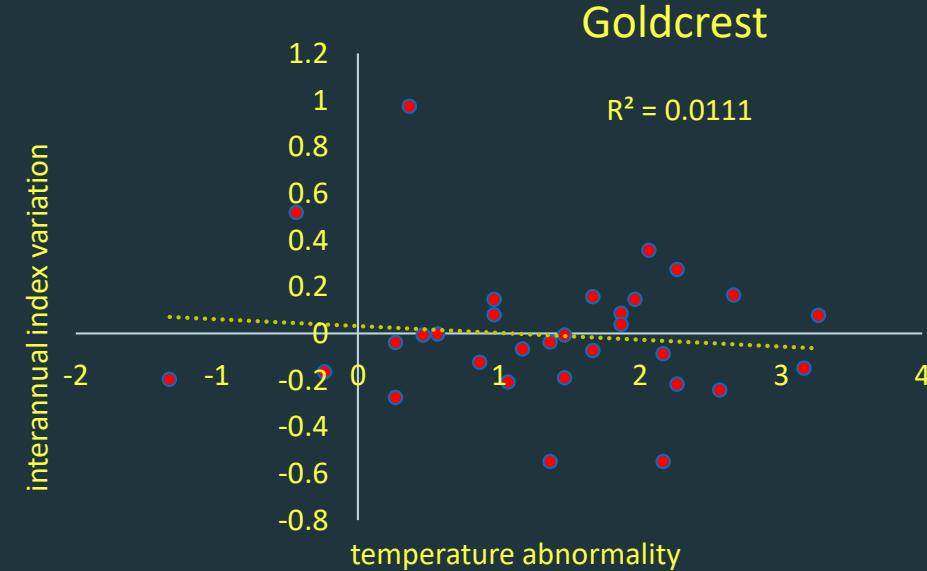
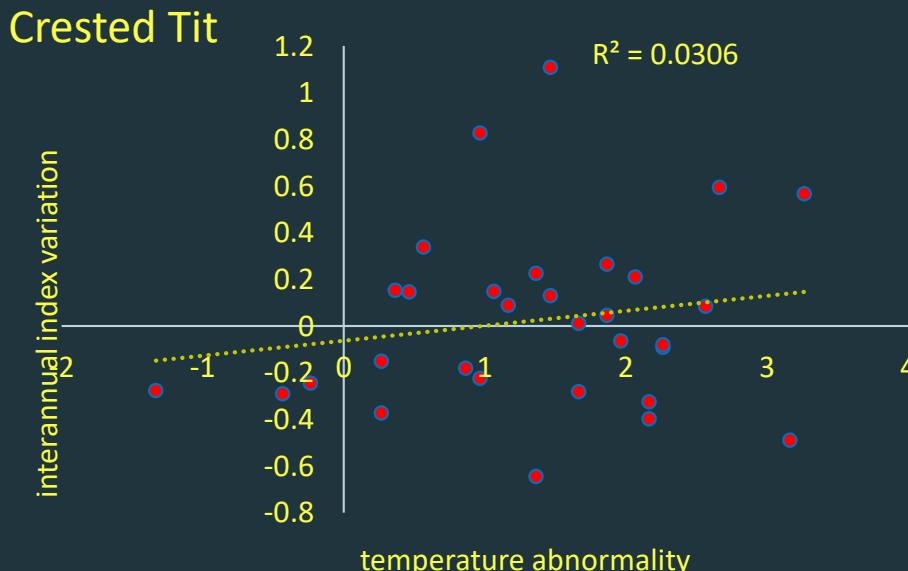
where there is stability or increase in coniferous cover



# No clear direct effect of temperature abnormality on trends



Here, in spring



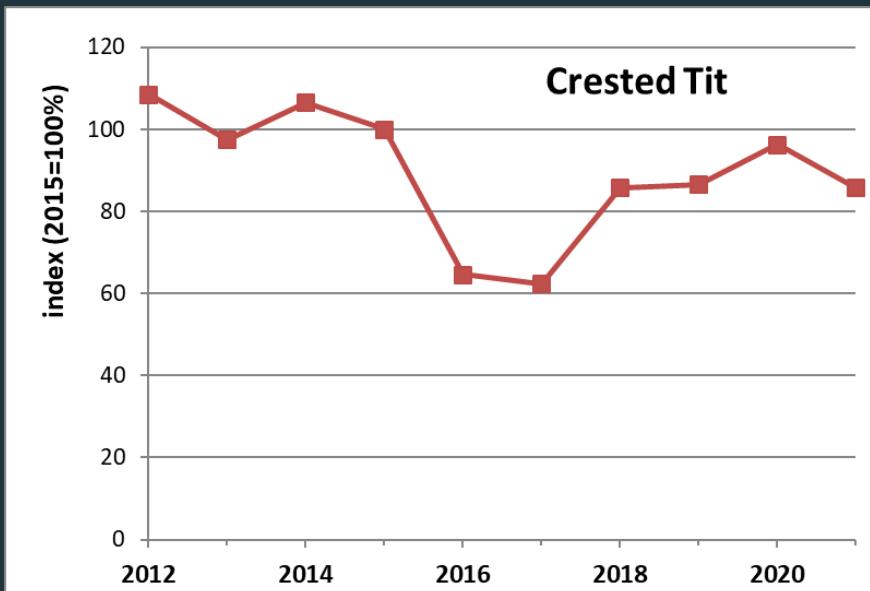
In 2018-2020, massive attacks from bark beetles especially on Spruce

mortality rate for Spruce in Flanders >80%

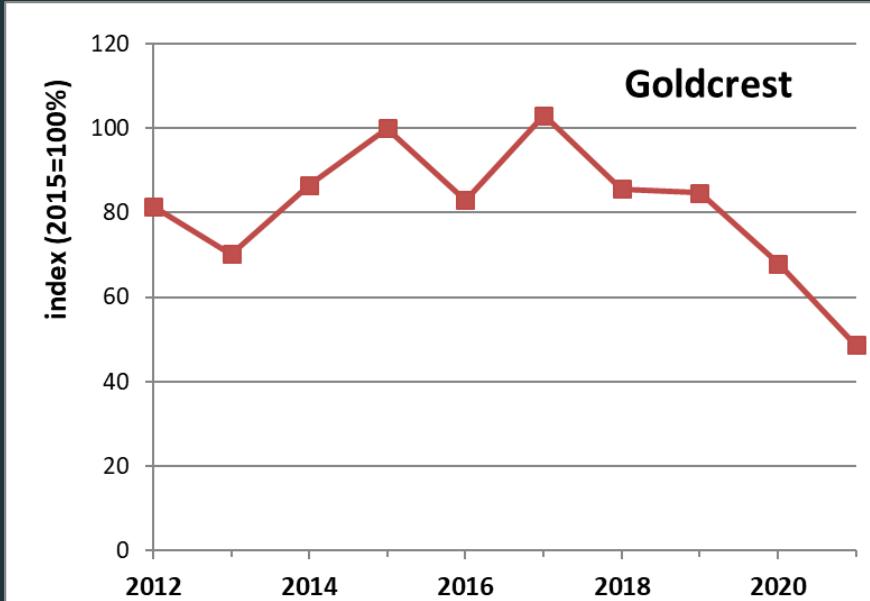


# Bark beetle ? Details from Flanders

Mostly in Pine



Mostly in Spruce



In Short :

The decline of specialist coniferous birds is not only due to a  
coniferous cover decline  
but possibly also due to sanitary conditions,  
in a country where coniferous forest is not indigenous

What about the rest of Europe ?

Many thanks to:

- The many observers and counters
- Regional authorities for nature and forest (SPW – IBGE – ANB)
- Institut Royal Météorologique





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