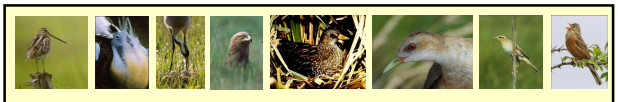
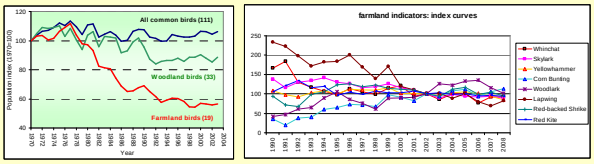


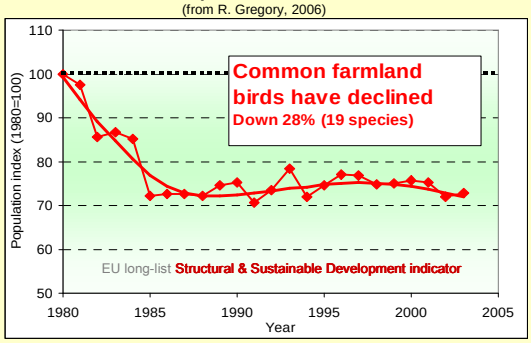
Composite Wild Bird Population Indicators – a critical view

Martin Flade & Johannes Schwarz



A biodiversity indicator for Europe: The Pan European wild bird indicator

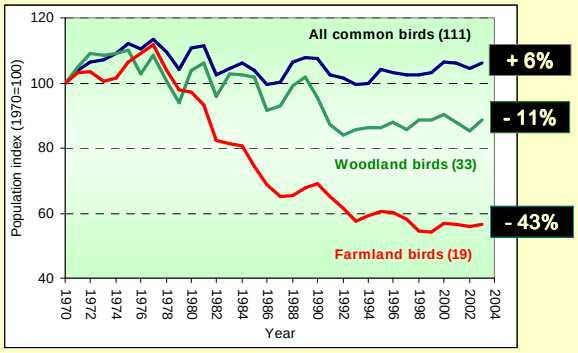
(from R. Gregory, 2006)



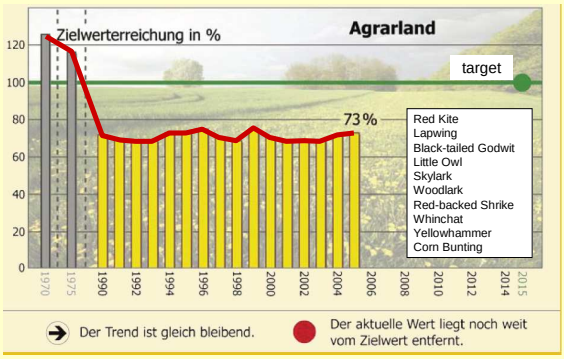
First ever Pan-European indicator for biodiversity!

UK government framework wild bird indicator

(from R. Gregory, 2006):



German Farmland Birds Index



Composite Wild Bird Indicators (WBI) are „sold" as indicators to measure (examples):

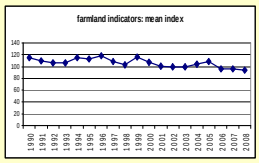
- Farmland biodiversity (R. Gregory, EBCC presentation 2006)
- Progress towards the target to achieve a significant reduction in the rate of biodiversity loss (Butchart et al. 2010, Science 328: 1164-1168)
- Environmental health (Gregory & van Strien 2010, Ornithol. Sci. 9)
- Structural and sustainable development (Butler et al. 2010, Agricult., Ecosyst. & Environm. 137: 348-357)
- Implementation and success of agri-environmental schemes (Butler et al. 2010, Agricult., Ecosyst. & Environm. 137: 348-357)

Do they?

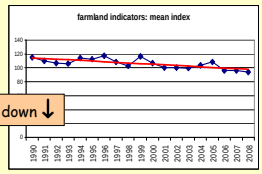
Three different examples of composite Wild Bird Indicators:

- suggestive messages
- implications
- the (possible) „truth" behind

German Farmland Bird Indicator



German Farmland Bird Indicator

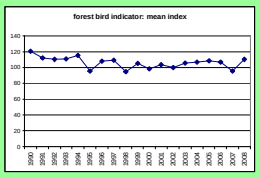


Indicator goes down ↓

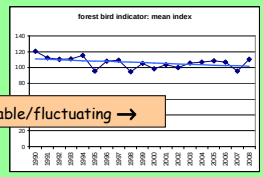
Suggestive message:	› Birds are declining. › Biodiversity is declining › Situation on farmland is bad (not sustainable).
Conservation & policy implications:	› Policy target of halting biodiversity loss is not achieved. › Conservation efforts have to be improved/ increased. › Agricultural policy is not sustainable / should be changed.
Possible „truth" behind:	› A substantial proportion of indicator species must be on decline. › If there occur any increases at all, they are weaker / less frequent than declines.

→ Messages and implications OK

German Forest Birds Indicator



German Forest Birds Indicator

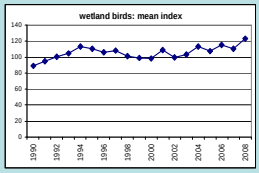


Indicator is stable/fluctuating →

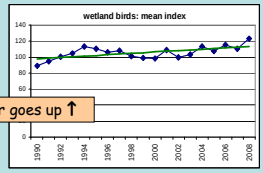
Suggestive message:	› Situation of forest birds is fairly stable / OK. › Status of biodiversity is +/- stable.
Conservation & policy implications:	› Policy target of halting biodiversity loss is achieved. › No serious conservation problem. › Current land use policy is acceptable / at least not disadvantageous for birds/biodiversity.
Possible „truth" behind:	› A substantial proportion of species is delining. › Declines are masked by increases of other species. › If development continues we will have a substantial loss of biodiversity. › We have a serious conservation problem. › There is a need of policy change

→ Indicator can be misleading

German Wetland Birds Indicator



German Wetland Birds Indicator

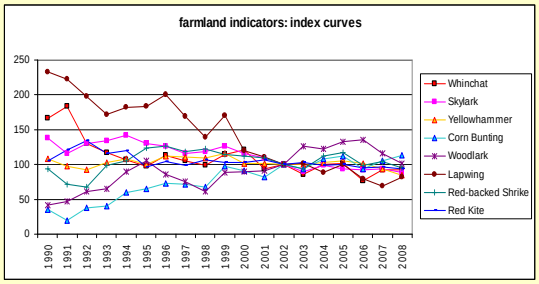


Indicator goes up ↑

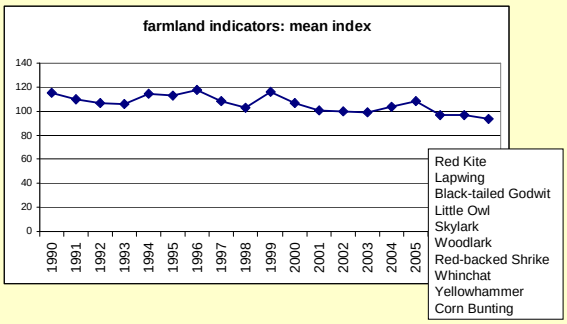
Suggestive message:	› Situation of wetland birds is improving. › Status of biodiversity is improving.
Conservation & policy implications:	› Policy target of halting biodiversity loss is achieved. › Conservation efforts have been successful. › Current policy is sustainable & supports biodiversity.
Possible „truth" behind:	› A substantial proportion of species is delining. › Declines are over-compensated by increasing species. › Incrasing species are more numerous or increases are stronger than declines (e.g. some species benefit, some suffer from eutrophication). › We have a serious conservation problem. › There is a need of policy change

→ Indicator can be misleading

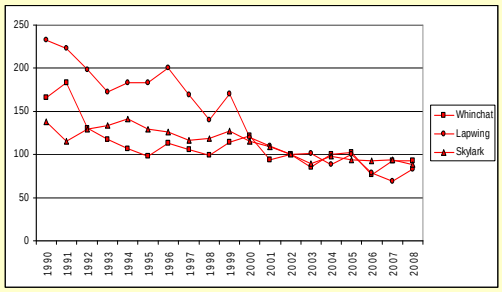
Example of selected German farmland bird indices



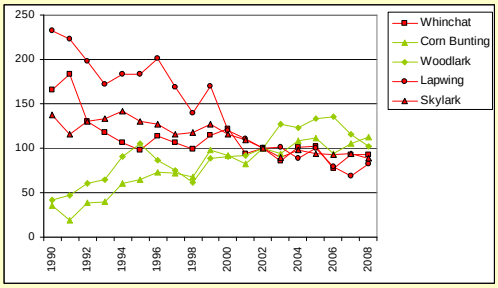
German Farmland Birds Indicator



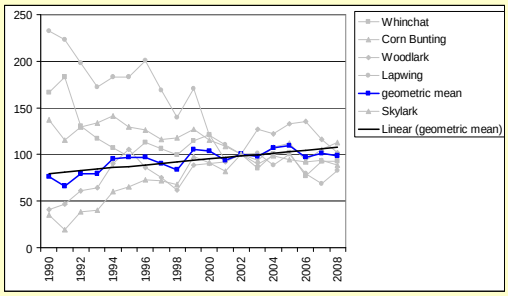
Example: 3 declining and 2 increasing species

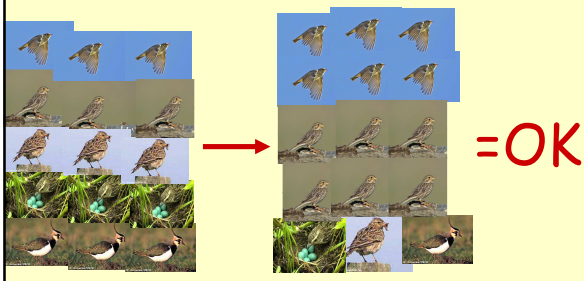


Example: 3 declining and 2 increasing species



Example: 3 declining and 2 increasing species





= loss of biodiversity!

What do composite Wild Bird Indicators (WBI) really measure? Which features or processes are indicated?

„The Farmland Bird Indictor is not the average of a mixture of positive and negative signals, but is meant to estimate one underlying signal using species trends as replicates" (Arco van Strien in lit., 2010)

But what kind of signal is intended to be measured?

- Biodiversity or biodiversity loss? – **Not necessarily**.
- Environmental health? – **No**.
- Stability? – **No**.
- Sustainability? – **No**.
- Policy success? – **Not at all**.

But what else?

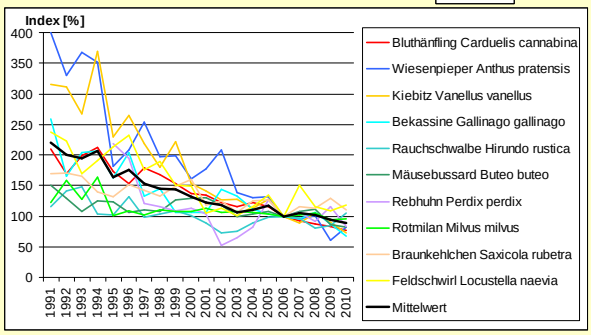
What is the „true message" of WBI?

⇒ **But what to do now?**

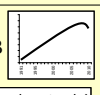
??

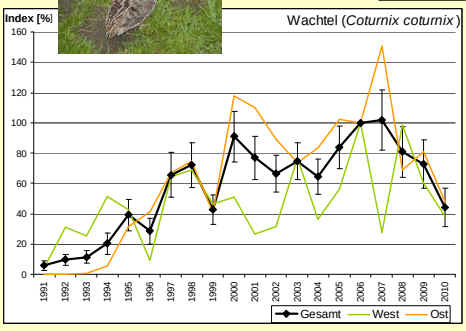
1. Species groups with similar trend pattern

Trend pattern A

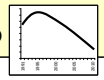


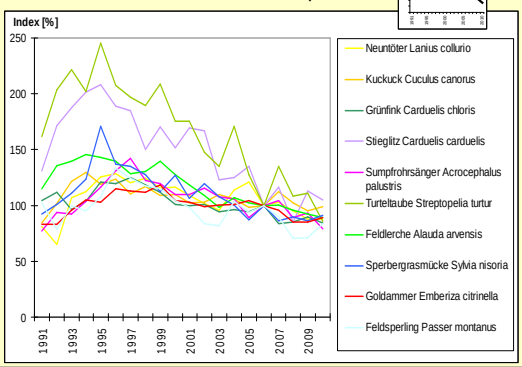
Trend pattern B





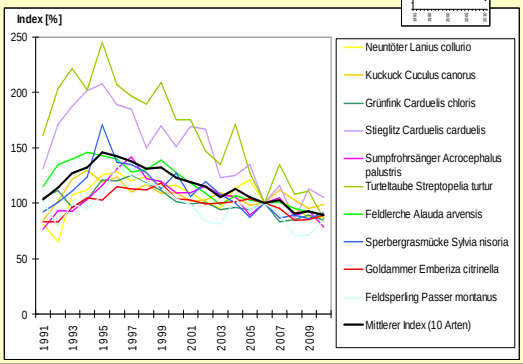
Trend pattern D





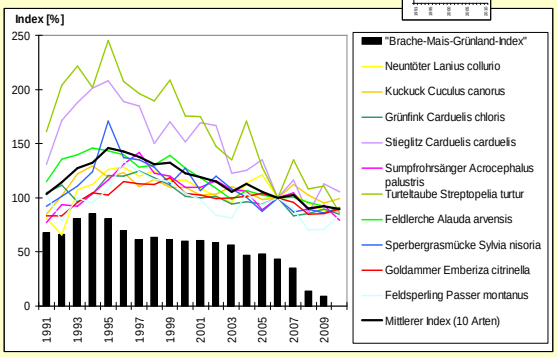
Martin Flade & Johannes Schwarz (DDA): Agrarwende – aber in die falsche Richtung

Trend pattern D



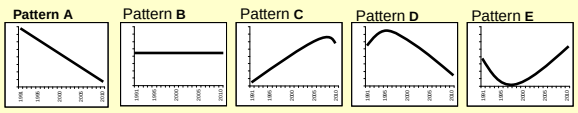
Martin Flade & Johannes Schwarz (DDA): Agrarwende – aber in die falsche Richtung

Trend pattern D



Martin Flade & Johannes Schwarz (DDA): Agrarwende – aber in die falsche Richtung

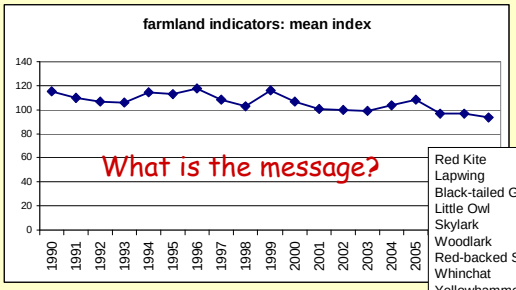
Types of trend pattern



Pattern A	Pattern B	Pattern C	Pattern D	Pattern E
Bluthänfling	Fasan	Grauammer	Goldammer	Großtrappe
Kiebitz	Aaskrähe	Ortolan	Kuckuck	Wiesenweihe
Bekassine	Schafstelze	Wachtel	Feldlerche	
Mäusebussard		Dorngrasmücke	Sumpfrohrsänger	
Braunkehlchen			Grünfink	
Wiesenpieper			Stieglitz	
Rauchschwalbe			Turteltaube	
Rebhuhn			Sperbergrasmücke	
Rotmilan			Feldsperling	
Feldschwirl			Neuntöter	

red:	East more positive than West
green:	West more positive than East
black:	no difference

German Farmland Birds Indicator

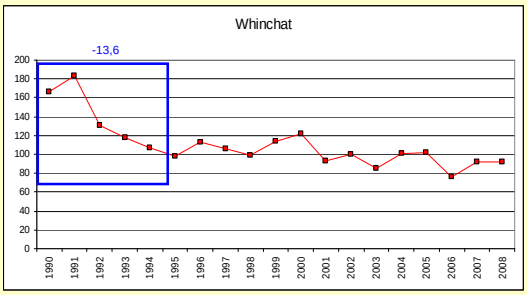


What is the message?

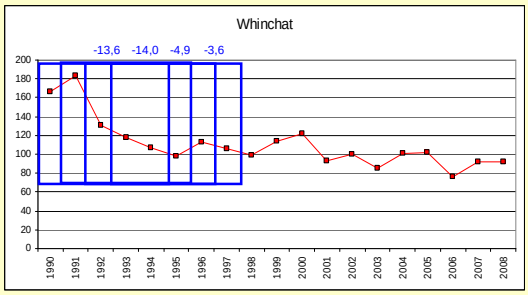
Red Kite
Lapwing
Black-tailed Godwit
Little Owl
Skylark
Woodlark
Red-backed Shrike
Whinchat
Yellowhammer
Corn Bunting

2. Five-years-declines and -increases approach

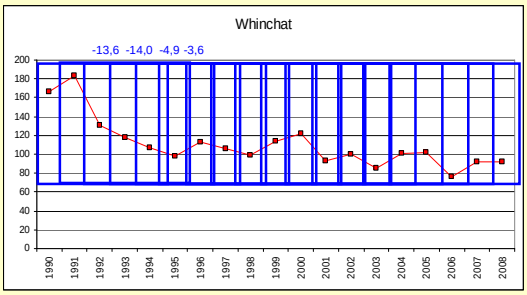
Proposal: measure 5-years-declines



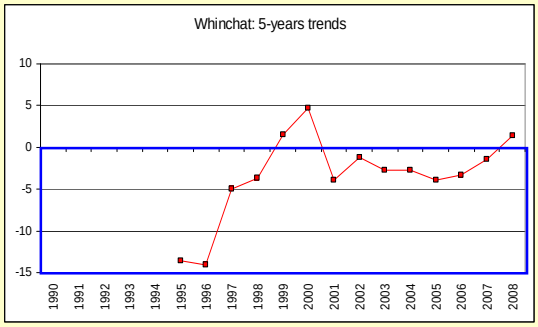
Proposal: measure 5-years-declines



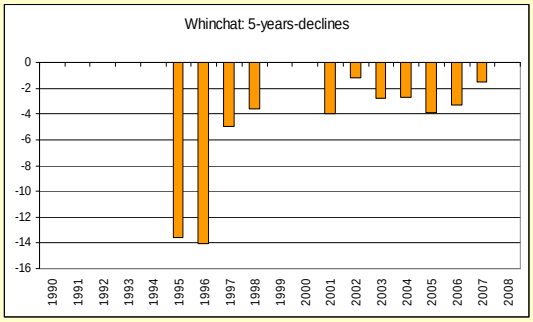
Proposal: measure 5-years-declines



5-years-declines: example of Whinchat



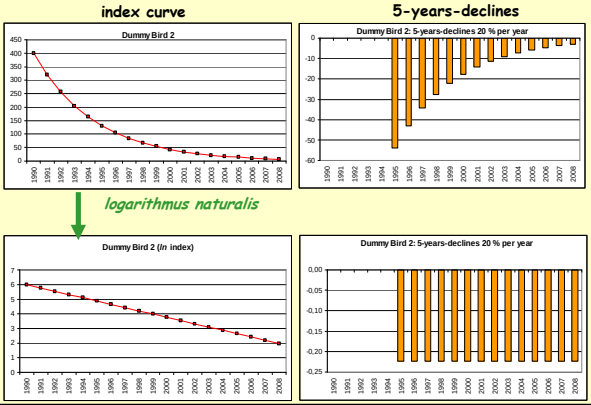
5-years-declines: example of Whinchat



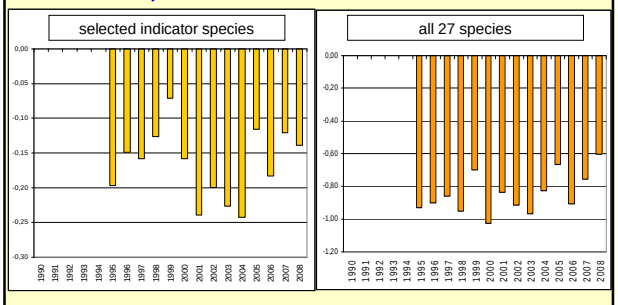
Attention! – for example: decline by 20 % per year

index curve

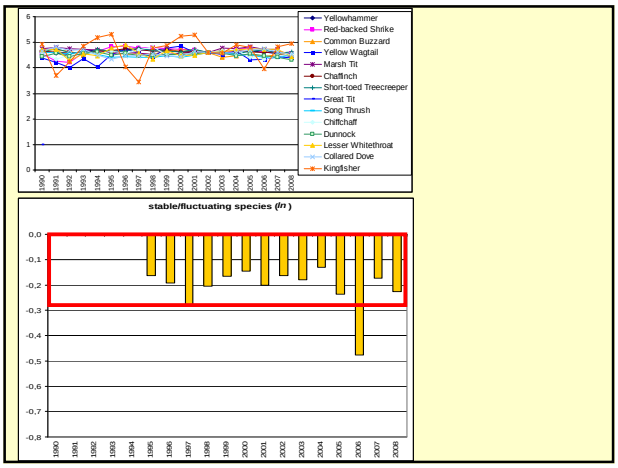
5-years-declines



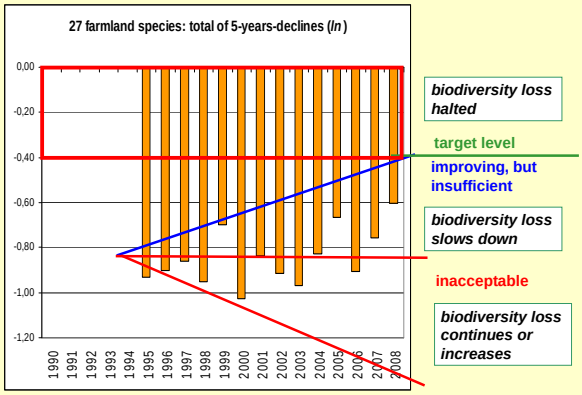
Idea for an indicator for biodiversity loss: total 5-years-declines in German farmland birds



⇒ losses continue / do slightly improve



Idea for a new indicator for biodiversity loss



biodiversity loss halted

target level

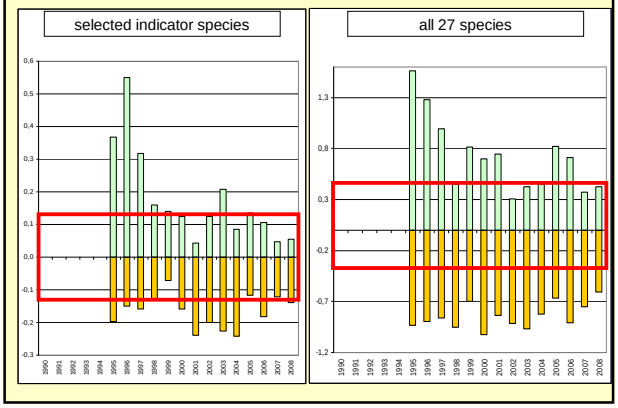
improving, but insufficient

biodiversity loss slows down

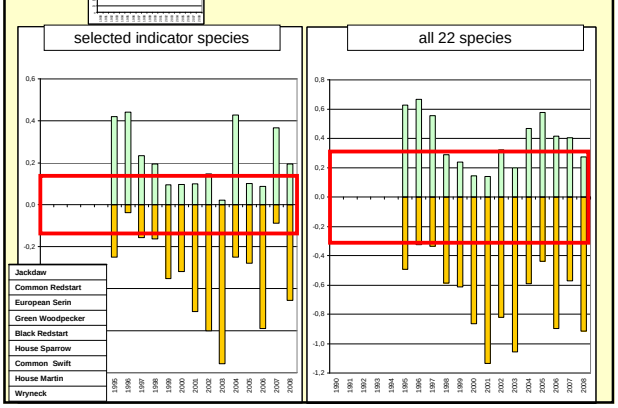
inacceptable

biodiversity loss continues or increases

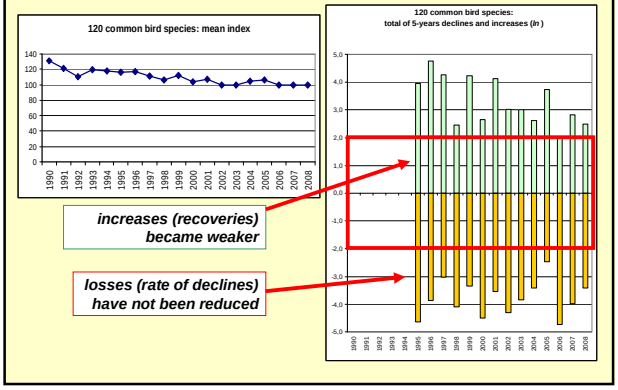
farmland birds



urban birds



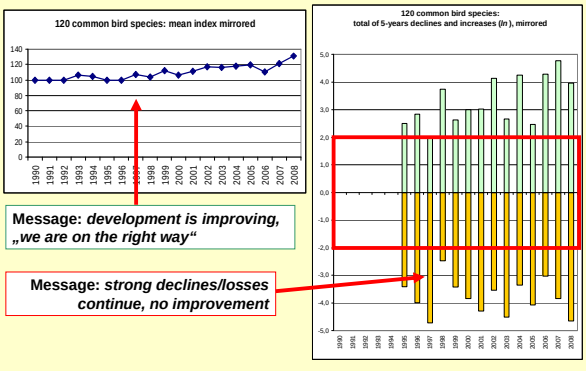
Summary for 120 species 1990-2008



increases (recoveries) became weaker

losses (rate of declines) have not been reduced

Assumption: data mirrored



Message: *development is improving, „we are on the right way“*

Message: *strong declines/losses continue, no improvement*

Advantages of the proposed indicator:

- ⇒ measures declines/losses and increases separately
- ⇒ can include as many species as possible (no need of species selection)
- ⇒ measures reality against policy targets (whether loss of biodiversity has continued, slowed down or halted)
- ⇒ increases do not mask declines
- ⇒ data-based target ranges (instead of agreement)

Disadvantages:

- ⇒ more difficult to understand *(but also: not so kryptic!)*
- ⇒ looks not so nice
- ⇒ increasing and declining species may exchange over time

Many thanks to

Christoph Sudfeldt (DDA), Arco van Strien

Dan Chamberlain, Marilise Wolf-Crowther

for fruitful discussions, and

>500 volunteers for providing the data