



Biodiversity Indicators 2015

State of Nature in Flanders (Belgium)

Nature Report Flanders

RESEARCH INSTITUTE
NATURE AND FOREST

Colophon

Auteurs: Heidi Demolder, Johan Peymen, Tim Adriaens, Anny Anselin, Claude Belpaire, Niko Boone, Lode De Beck, Luc De Keersmaeker, Geert De Knijf, Koen Devos, Joris Everaert, Ivy Jansen, Lon Lommaert, Dirk Maes, Thierry Onkelinx, Ilse Simoens, Maarten Stevens, Marijke Thoonen, Koen Van Den Berge, Beatrijs Van der Aa, Peter Van Gossum, Wouter Van Landuyt, Wouter Van Reeth, Jan Van Uytvanck, Glenn Vermeersch & Hugo Verreycken.

Layout: Nicole De Groof

Administration: Anja De Braekeleer
Research Institute for Nature and Forest
Kliniekstraat 25, B-1070 Brussels
e-mail: nara@inbo.be
website: www.inbo.be
tel: +32 2 525.02.28
fax: +32 2 525.03.00

Responsible publisher: Maurice Hoffmann, Research Institute for Nature and Forest

Citation wording: Heidi Demolder, Johan Peymen, Tim Adriaens, Anny Anselin, Claude Belpaire, Niko Boone, Lode De Beck, Luc De Keersmaeker, Geert De Knijf, Koen Devos, Joris Everaert, Ivy Jansen, Lon Lommaert, Dirk Maes, Thierry Onkelinx, Ilse Simoens, Maarten Stevens, Marijke Thoonen, Koen Van Den Berge, Beatrijs Van der Aa, Peter Van Gossum, Wouter Van Landuyt, Wouter Van Reeth, Jan Van Uytvanck, Glenn Vermeersch & Hugo Verreycken. (2015). Biodiversity Indicators. State of Nature in Flanders. Mededeling van het Instituut voor Natuur- en Bosonderzoek, INBO.M.2015.11178787.

©2015, Research Institute for Nature and Forest.

Subject to acknowledgement, the reproduction of texts is encouraged

D/2015/3241/338
INBO.M.2015. 11178787

Headlines

Introduction

Flanders has endorsed the European 2010 biodiversity objective to halt biodiversity loss by 2010. However, this 2010 target has not been met (EEA, 2010). Nearly a quarter of the wild species are critically endangered in Europe and most ecosystems are so affected that they are much less able to provide their valuable services. These harmful effects confront the EU with huge social and economic losses (Braat & ten Brink, 2008). In response the European Commission adopted a new strategy (European Commission, 2011). It is built around six mutually supportive and inter-dependent targets addressing the main target 'Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss'. They aim to reduce key pressures on nature and ecosystem services in the EU. Each target is complemented by a set of focused, time-bound actions to ensure these ambitions are fully realized.

On the basis of 36 indicators, this report wants to summarize the main conclusions concerning the European Biodiversity Strategy targets. Target 4 (Ensure the sustainable use of fisheries resources) is not covered as it is under the authority of the Federal Government.

Target 1: To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

For more than half of the species listed on the Annexes of the Habitats Directive, the conservation status is poor and for nine species (16%) the status is inadequate. For six (10%) species there was insufficient data to evaluate the status. Only nine species (15%) have a favourable conservation status.

The population goals for breeding birds of European importance are met for three out of 20 species. For six species the population is 50% away from their goals, for the other 11 species there is still a large distance, between 50-100%, to the target. Seven out of the 19 wintering water birds of European importance meet the population goals and for three species the distance to target is relatively small (less than 10%). For nine species there is a rather large gap between actual numbers present and population goals.

The conservation status of more than three-quarters of the habitats (38 habitats) is poor, for 9% (four habitats) it is inadequate. As a result, only five habitats have a favourable conservation status.

Of the 2.101 species on validated Red Lists, 146 became locally extinct during the last century. A total of 479 species (24%) are on the Red List and are vulnerable to extinction if necessary measures are not taken. The decline of these species is the result of decreasing habitat area and a decline in habitat quality.

In order to protect the species and habitats of the Habitat- en Bird Directive more efficiently, 24 Special Protection Areas and 38 Sites of Community Interest were designated. Together, these areas constitute the Natura 2000 network, comprising 166.322 ha or 12,3% of the Flemish terrestrial area.

In order to halt the further loss of threatened species, the Flemish Government is taking several measures. In the past, 18 species conservation plans were drawn up with an emphasis on species of international importance. Since 2011, species protection plans have been replaced by species protection programmes, eleven of which are under preparation and/or have been launched.

Target 2: By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

While Target 1 emphasizes the favourable conservation status for species and habitats of the Habitats and Birds Directive, Target 2 aims at the restoration of ecosystems and their services. The extinction and decline of species is the result of decreasing habitat area and a decline in habitat quality. Very specific habitats degrade to more common, usually nutrient-rich, habitats. As a consequence, many rare species, restricted to these specific habitats, are in decline. On the other hand, numbers of some common species and some alien species are increasing. As a result, variation in biodiversity decreases. Numbers of some breeding birds like magpie, carrion crow and wood pigeon occurring in a wide variety of habitats, increase. On the other hand the improved quality of water courses has a positive effect on water-bound organisms. But the decreasing organic pollution of these water courses also resulted in a decrease of the food supply. This probably explains the decline in the number of wintering waterfowl since 2002.

To maintain and restore ecosystems and species, the Flemish Government provides a mix of rules and other policy instruments. On top of these rules the Flemish Government has introduced also some subsidy schemes and other instruments aimed at increasing and managing of nature areas. Early 2011, the area with a conservation management plan covered 63.329 ha. By the end of 2014 this area had increased with 12.877 ha to 76.206 ha. Since 1998, a tool called 'ecological restoration' has been used by the Agency for Nature and Forest (ANB) and the Flemish Land Agency (VLM) in order to restore areas in function of nature. Ecological restoration aims at creating better conditions for the development of nature in designated areas through active intervention. At the end of 2014, 15 projects were implemented and 11 running. The total realized area increased to 4.441 ha in 2014.

Besides maintaining and restoring ecosystems, Target 2 also stresses the enhancing and the sustainable use of ecosystem services. This report introduces an new indicator for the state and trend of 16 ecosystem services in Flanders. The state and trend of these 16 ecosystem services is thoroughly examined in Stevens *et al.* 2014.

The state of an ecosystem service is determined by the relationship between its supply and demand, the trend in that relationship and the impact of the use of ecosystem services on the supply of other

ecosystem services. For 15 of the 16 ecosystem services (ESS), the demand exceeds always the supply, in seven of which greatly. The trend in the supply of and demand for the 16 ecosystem services is variable. Both demand and supply show (slightly) increasing or decreasing trends depending on the ecosystem service. The demand is increasing more frequently (13 ESS) than the supply (7 ESS) (Jacobs *et al.* 2014).

Because demand exceeds supply (by a large margin in some cases), most ecosystem services in Flanders are used intensively or exploited. The demand for various services is also increasing, and is no longer in equilibrium with the natural supply. The demand for food production continuously increases.

The demand for food in Flanders is increasing as the population rises. The supply is also growing, but is unable to keep pace with the growing demand. Flanders therefore imports large quantities of food (See also info graphic page 42 in Stevens *et al.* 2014). The demand for wood in Flanders is also growing, while the supply slowly decreases. As a consequence, a great amount of wood is imported to meet the demand. (See also info graphic page 19 in Stevens *et al.* 2014). For some ecosystem services a shortage in supply is supplemented by imports. For other ecosystem services (e.g. water quality regulation, air quality regulation, flood regulation or green space for outdoor activities) a part of the social demand remains unfulfilled. Unmet demand often takes the form of environmental damage, economic damage or health costs. The supply deficit for some ecosystem services is also met by technological solutions, e.g. water treatment plants.

To state of certain ecosystem services can be substantially improved by adjusting the ESS-demand, particularly for food production, production of energy crops and water production, water quality regulation, air quality regulation and carbon sequestration (Jacobs *et al.* 2015). Demand for these services is closely knit. A high demand for food and energy and their current production contributes significantly to the emission of greenhouse gas emissions, air and water pollutants. This causes a further increase in the demand for regulating ecosystem services. However, a decrease in the demand does not necessarily result in lower availability of food or water. The composition of the food (e.g. vegetable versus animal) and of the water used (e.g. drinking-water versus rainwater), and an increased efficiency of production chains offer great potentials for improving the state of ecosystem services. Adjusting the ESS- supply may also improve the condition of the most of the services. Through optimization the supply of multiple ecosystem services can be increased together. In this case physical changes in land use increase the supply of ecosystem services. However, the potential for major changes in land use in Flanders is limited.

Not only aspects of demand and supply should be considered. The state of ecosystem services can also be improved by adapting their use: nature based solutions concerning management of green spaces, agricultural techniques and the organization of urban area. Nature based solutions are often synergetic: on top of an increase in the supply of one or more services, they often decrease the negative impact on the (future) delivery of services. Research shows that for instance agricultural measures like 'no-till farming' can increase the supply of regulation of erosion risk, maintaining soil fertility, global climate regulation and natural pest control. At the same time emission of greenhouse gasses and fine particulate matter can decrease, and the negative impact on supporting soil biodiversity reduces. With that, changes in use of ecosystem services often are accompanied by a saving in expenses (or profit) for stakeholders.

An unbalanced, intensive use of one ecosystem service often coincides with negative effects on other ecosystem services. Because of this, the current and future delivery of ecosystems is postponed. Soils for our food production for instance become less and less fertile. But the ecosystem service 'maintenance of soil fertility' is vital for the ecosystem service 'food production'. This trend has been strengthened through the fact that the surface of agricultural area in Flanders has shrunk during the past decade. Agricultural techniques that bring more carbon into the soil can ameliorate the fertility of our soils. Examples of these more recently applied techniques are green manures and 'no-till farming'.

Approximately 21% of the population in Flanders does not have green space for daily use within walking distance (Simoens *et al.* 2014) at one's disposal. Furthermore, about 55% of the area in Flanders is less attractive for recreation and experiencing nature. This open area is less attractive because of buildings, noise or because natural and /or cultural elements are missing. Safeguarding existing green spaces, improving accessibility and targeted creation of green infrastructure can generate high socio-economic benefits, especially in an urban context where space is scarce (Simoens *et al.* 2014).

The Flemish Government encourages the accessibility of forests and nature reserves and provides an instrument to help expand accessibility. As a result other users than pedestrians, e.g. horsemen, can be allowed access, or certain areas can be designated as play or bivouac zone. In 2013 accessible forests and nature surface more than doubled compared to 2012 and went from 7.074 ha to 15.486 ha. In 2014 the area increased with 12.094 ha, and the total area accessible forests and nature reserves has reached 27.581 ha. Both in public and private forest and nature reserves, play areas can be designated. In 2014 ± 2.337 ha forest and nature reserve were designated as play area. In order to increase

the livability of cities in Flanders, the Flemish Government wants to create more accessible city forests near urban areas. In 2014, 62% of the urban areas had launched a city forest project.

The number of members of nature organizations active in Flanders can be interpreted as an expression of support for nature within our society. Since the beginning of the census in 1994, the number of memberships of nature organizations in Flanders has increased almost every year. 2014 showed a growth by 17.000 memberships.

Habitat loss, fragmentation, pollutants and eutrophication, invasive alien species, overexploitation of groundwater and climate change still have an important negative impact on the biodiversity of ecosystems in Flanders (Demolder *et al.* 2014). Evidence that climate change is starting to affect nature in Flanders is mounting. The trend of the peak of pollen production shows a clear advance in time over the years for a number of trees (e.g. birch) and several grasses. The indicator 'leaf phenology oak and beech' also proves the impact of climate change on biodiversity, in this case the phenology of tree species. Leaves of both oak and beech develop faster when spring temperature is higher. Further warming will cause an earlier start and an extension of the growing season possibly causing trees to grow harder. At first sight, this seems positive, but the consequences for tree vitality are still unclear. Not only the phenology, but also the geographical range of species is changing. Southern species are expanding northwards. This is the case for southern dragonflies and damselflies like *Crocothemis erythraea* or the *Coenagrion scitulum*. In the past they were vagrant species, but now they have many flourishing populations.

Eutrophication has been one of the most important factors of the last century influencing biodiversity. In 2011, nitrogen deposition exceeded the critical load in 94% of the area of the terrestrial ecosystems in Flanders. This prevents the restoration to a favourable conservation status.

Fragmentation of watercourses by weirs and sluices, combined with the degradation of water and habitat quality, constitutes an important problem for the conservation of aquatic species, in particular fish. Considering the current efforts in sanitizing barriers, phase 1 of the Benelux decision probably will not be achieved. Besides, the inventoried fish migration barriers of phase 2 will probably be sanitized only after 2021. Meanwhile, migratory fish species are recovering slightly, probably as a result of improved water quality in the bigger rivers.

Landscape fragmentation caused by road infrastructure is very high in Flanders. This results in many problems for the conservation of wildlife and nature areas. In 2015, the quantity and quality of current defragmentation measures along highways, large and secondary roads, railways and canals is limited.

As a result of these human influences, ecosystems can no longer deliver the services we need as society. Stevens *et al.* 2014 mention also urbanization, changing agricultural measures, environmental pollution, overexploitation of groundwater reserves and soil as causes for the loss of ecosystem services. These direct drivers are driven by indirect factors. These are often social processes such as population growth, economic growth and cultural shifts that shape human choices and actions.

Target 3: Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity.

By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 baseline, thus contributing to enhance sustainable management.

By 2020, forest management plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size (to be defined by the Member States or regions and communicated in their rural development programmes) that receive funding under the EU rural development policy so as to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 baseline.

The evaluation of the conditions of farmland species in Flanders is illustrated by the farmland breeding bird index. After the huge decline of farmland birds in past decades, there is still no sign of any population recovery (Onkelinx & Vermeersch, 2014).

In order to protect farmland species and ecosystems, farmers can adopt agri-environmental schemes. Recently, a series of newly developed environmental schemes was presented for the period 2014-2020, for example for pollarding tree rows and survival enhancement of breeding grassland bird chicks. In 2015 the scheme for planting linear landscape elements was cancelled, only conservation management of these elements is still granted. Agri-environmental schemes for botanical management were not successful and the amount stagnated the last years. The demarcation of priority zones for all current agri-environmental schemes aims to increase the effectiveness of these measures (Van Uytvanck *et al.* 2014 & 2015). Currently, about 12% of the farmers in Flanders adopt an agri-environmental scheme.

Numbers of forest birds increased the last decades, but most recent data show a fluctuating trend. In order to protect biodiversity in forests, the Flemish Government enacted the Forest Decree. This decree makes management plans for all forests larger than five ha compulsory. For public forests and some private forests these management plans have to comply with the criteria for sustainable forest management. These approximately follow the guidelines of the Forest Stewardship Council (FSC). Between 1990 and 2014, forest management plans for 63.662 ha were approved (32.483 ha extensive and 31.179 ha limited). Through the establishment of these management plans, the Flemish Government also tries to create a balance between the environmental, economic and social functions of forests.

Target 5: By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

Invasive alien species (IAS) are considered a major threat to biodiversity worldwide (Pimental *et al.* 2002; Vié *et al.* 2009; Cox, 2004). During the last years, the number of alien plant and animal species has increased drastically in Flanders. The proportion of alien plant species has doubled since the 1970s from 5% to almost 10%. Between 1800 and 2015 at least 275 alien animal species have established permanent populations in Flanders. The rising number of alien species increases the risk of problemat-

ic invasive alien species. IAS can severely impact on ecosystem structure and function, replace native species or impose a threat to unique biodiversity. In addition, they may have negative consequences for human activities, health and/or economic interests. As part of the European policy an international list of problematic species was drawn up. In Flanders, at least 89 of such potentially harmful IAS occur. At least 41 of them also really behave invasively in nature.

On January 1, 2015 the new European regulation on the prevention and management of invasive alien species went into effect (EU PE-CONS 70/14). This new European legislative framework Flanders imposes a number of new rules regarding the prevention of new introductions, the intervention on introduction pathways of unintentional introductions and management of established invasive species. The development of an early warning system, the rapid eradication of new problem species and the development of a management system for monitoring, evaluation and reporting (Adriaens, 2014) are also crucial. Within the scope of the Bern convention the alien ruddy duck (*Oxyura jamaicensis*) should be eradicated in the wild in Europe and North Africa by 2015. Since 2012, the Flemish Government set up an early warning system and a coordinated rapid response mechanism in cooperation with NGO's.

Target 6: Help avert global biodiversity loss.

By 2020, the EU has stepped up its contribution to averting global biodiversity loss.

Bruers and Verbeek (2013) calculated the ecological footprint of Flanders in 2013, based on a new methodology and more detailed data. According to this recalculation the footprint of a Flemish person in 2004 was nine global hectares¹ (gha), which is 43% higher than the previous 6.3 gha estimate in Bruers & Verbeeck (2010). Flanders consumption footprint is mainly energy related: 49% of the Flemish footprint consists of so-called energy land. This is the virtual forest area required for CO₂ absorption. The consumption of renewable materials (cropland, grazing land, fishing grounds and forest land used in agriculture, fisheries and forestry) has a 46% share. 5% is built-up land (buildings and infrastructure). For more information on the ecological footprint we refer to the website of the Environment Report (www.milieurapport.be) of the Flanders Environment Agency.

¹ The global hectare (gha) is a measurement unit for quantifying both the Ecological Footprint of people or activities as well as the biocapacity of the earth or its regions.

About this publication

Introduction

The Research Institute for Nature and Forest (INBO) produces its Nature Report by decree.

This report includes:

- a description and evaluation of the existing biodiversity in Flanders
- the expected evolution of the biodiversity by unchanged policy and by the intended policy of the Flemish Government
- the evaluation of past policy

This Indicator report is a part of the nature report (Natuurrapport, NARA) and annually provides and interpretation of the biodiversity indicators (description of the state).

The Flemish Biodiversity indicators report summarizes facts and figures about nature and nature policy in Flanders. A broad set of indicators can be consulted (in Dutch) online on www.natuurindicatoren.be. Every indicator is presented in an indicator sheet that contains a graph, a brief description of the indicator, a synthesis of the trend and if relevant a distance to the policy target. This report compiles the 'priority indicators' from this set.

The nature report is also a part of the Environment Report, and an extensive set of environmental indicators can be found on www.milieurapport.be of the Flanders Environment Agency.

Priority Indicators

This report provides an overview of the nature indicators that are considered as the most important to follow, based on a number of criteria. They are selected because they are included in of the Environmental Policy Plan (Flemish Government, 2011), and/or because they give an interpretation of the progress towards the targets of the European Biodiversity Strategy for 2020. This set of 35 indicators thus tries to evaluate the Flemish progress towards the EU 2020 targets.

In 2004, the SEBI 2010 process ('Streamlining European Biodiversity Indicators') was established. SEBI 2010 develops and follows headline indicators in order to monitor progress towards the 2010 biodiversity objective (EEA, 2007; European Commission, 2006). In 2012, the original set of 26 indicators was adapted to the targets of the European Biodiversity Strategy for 2020. All the SEBI indicators can be used to measure progress against this six EU Targets (EEA, 2012a). When a Flemish biodiversity indicator coincides with a SEBI indicator, the corresponding number of these SEBI indicator is mentioned.

The EU 2020 targets for Biodiversity align with the global 'Aichi Targets' drawn up by the Convention on Biological Diversity in 2010.

The description of each indicator contains the corresponding EU 2020 target for Biodiversity, a definition of the indicator and a description of the status and trend. When possible, an explanation for the evolution of the trend is given. The assessment of the trend is based on a statistical trend analysis. The data don't allow this for all indicators. The time-series is for instance too short or too many records are lacking. For more information on the assessment of the trend, we refer to the report of [Jansen I.](#) (2015).

At the bottom of the page, under 'Trend', the results of the trend calculation are briefly described. The button 'open trend' shows the graph.

Most indicators are based on the most recent data available, in the majority of the cases this is up to 2014.

Quality indicators

Quality indicators ideally meet a number of internationally established criteria (see box). We try to meet these criteria as much as possible when we develop biodiversity indicators.

Criteria for the selection of biodiversity indicators (Ash *et al.* 2010, EEA (2012b), Layke (2012), (Pires 2011))

- Policy-relevant: indicators should send a clear message and provide information at a level appropriate for policy and management decision-making . The Flemish environmental policy plan is an important guideline document but new insights must also be translated into policy.
- Biodiversity-relevant: indicators should address key properties of biodiversity or related issues as pressures, state, impacts and responses.
- Scientifically sound: indicators should be based on clearly defined, verifiable and scientifically acceptable data, collected using standard methods with known accuracy and precision, or based on traditional knowledge that has been validated in an appropriate way.
- Legitimate: indicators must be accepted by stakeholders. Involvement by policymakers and the most important stakeholders with the development of an indicator is highly recommended.
- Understandable: the information must be presented in an understandable, unambiguous and visually attractive manner.
- Meeting of the target: if a policy target is formulated, the indicator should enable to evaluate (policy) targets, using determined baselines.
- Spatial coverage: since the indicator report has to provide a description of the state of biodiversity in Flanders, it has to hold a regional range and/or significance.
- Sustainable: indicators should be measurable in an accurate and affordable way, and constitute part of a sustainable monitoring system.

Biodiversity indicators in Flanders		European Biodiversity Strategy 2020	Pag. nr.
1	Breeding Bird Index	Target 2	17
2	Grassland butterflies	Target 2	18
3	Overwintering waterfowl	Target 2	19
4	Red List amphibians and reptiles	Target 1	20
5	Red List butterflies	Target 1	21
6	Red List ladybirds	Target 1	22
7	Red List water bugs	Target 1	23
8	Red List fresh water fish	Target 1	24
9	Red List mammals	Target 1	25
10	Species status	Target 1	26
11	State and trend of ecosystem services	Target 2	27
12	Number of species conservation plans	Target 1	28
13	The number of sanitized fish migration barrier (Priority 1 of the strategic priority map)	Target 2	29
14	Conservation status of species of European interest	Target 1	30
15	Conservation status of habitats of European interest	Target 1	31
16	Status breeding birds of European importance	Target 1	32
17	Status wintering waterbirds of European importance	Target 1	33
18	Sites designated under the EU Habitats and Birds Directives	Target 1	34
19	Area with conservation management	Target 2	35
20	Forest area	Target 2	36
21	Area with accessible forests and nature reserves	Target 2	37
22	Play areas in forests and nature reserves	Target 2	38
23	Urban area with a city forest or a city forest project	Target 2	39
24	Southern-European dragonflies	Target 2	40
25	Leaf phenology oak and beech	Target 2	41
26	Peak pollen production by birch and several grasses	Target 2	42
27	Alien species	Target 5	43
28	Number of listed 'worst' invasive alien species threatening biodiversity	Target 5	44
29	Number of wintering ruddy duck in Flanders	Target 5	45

Biodiversity indicators in Flanders		European Biodiversity Strategy 2020	Pag. nr.
30	Defragmentation along road infrastructure in Flanders	Target 2	46
31	Area with implemented ecological restoration projects	Target 2	47
32	Forest area with management plan according to the criteria for sustainable forest management	Target 3	48
33	Area with agri-environmental measures	Target 3	49
34	Frequency of visits to forests and natural areas	Target 1	50
35	Membership of NGO's for nature conservation	Target 1	51

Breeding Bird Index

European
Biodiversity Strategy
2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems. (SEBI 01)

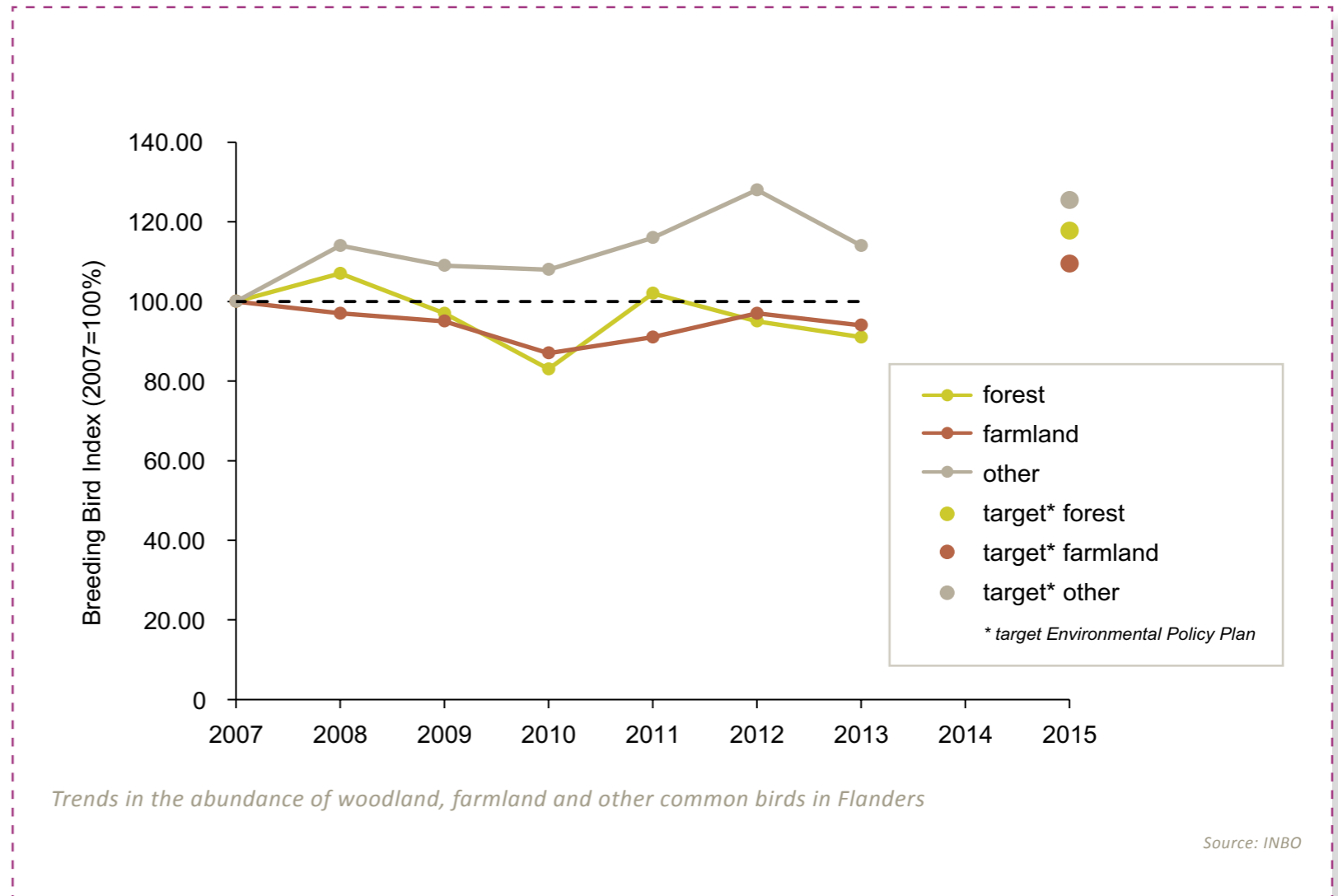
Target 2

The common bird indicator combines the trends of a selection of common and widespread breeding birds in Flanders. The data (collected in the 2007-2013 period) are based on observations by volunteer bird watchers for the common bird monitoring scheme coordinated by INBO and Natuurpunt.

The indicator features three categories: farmland birds, forest birds and generalist species occurring in a wide variety of habitats (sometimes including forests and farmland).

Most recent data show fluctuating trends for farmland and forest birds. After the huge decline of farmland birds in past decennia, there is still no sign of any population recovery. Generalist species are increasing (Onkelinx & Vermeersch, 2014).

Trend:
birds farmland: changing, without a clear in- or decrease
birds forest: changing, without a clear in- or decrease
generalist species: increase



Grassland butterflies

European Biodiversity Strategy 2020

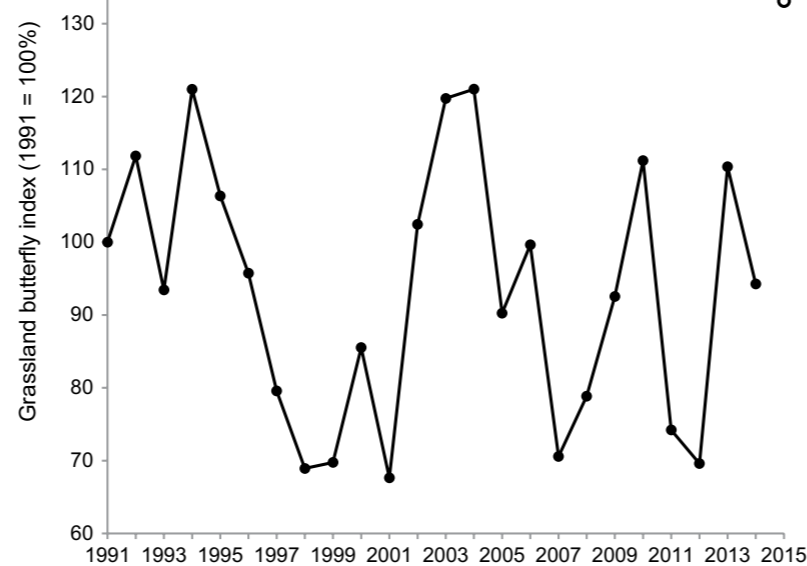
Target 2

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems. (SEBI 01)

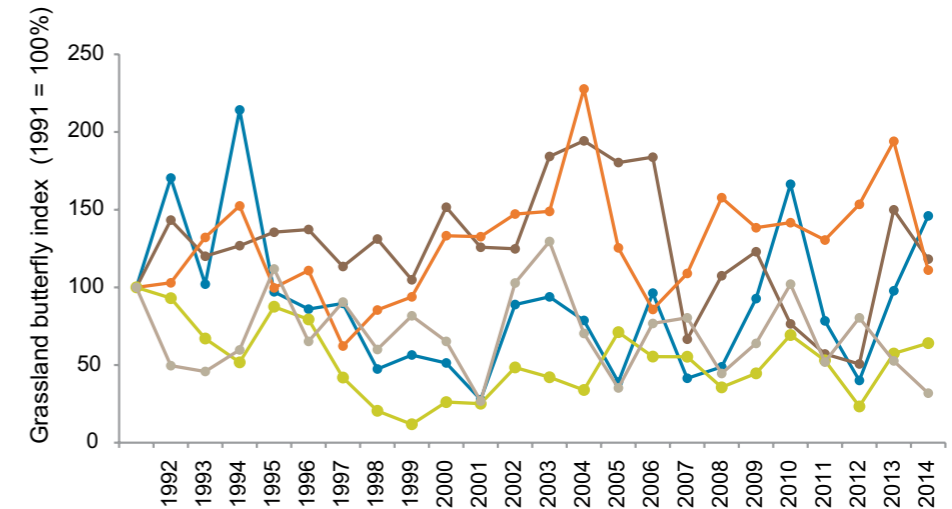
The European grassland butterfly index describes the trend of a selection of butterfly populations associated with grasslands in several European countries, based on a standardised monitoring system (van Swaay *et al.* 2015). In Flanders, sufficient data are available only for five common species: *Maniola jurtina*, *Ochlodes faunus*, *Polyommatus icarus*, *Lycaena phlaeas* and *Anthocharis cardamines*. The index shows changes between years, with 1992 taken as a reference year (= 100).

The trend of the data from Flanders shows clear fluctuations. The index decreases slightly during the first ten years of the monitoring, but since 2000 the composed indicator is stable. Four of the five species remain more or less stable (*Maniola jurtina*, *Lycaena phlaeas*, *Ochlodes faunus* and *Polyommatus icarus*); only *Anthocharis cardamines* increases slightly (Van Dyck *et al.* 2015).

Trend: no correct trend determination possible



○ target
Environmental
Policy Plan



— *Polyommatus icarus*
— *Maniola jurtina*
— *Anthocharis cardamine*
— *Ochlodes sylvanus*
— *Lycaena phlaeas*

Abundance of grassland butterflies, aggregated (left) and individual species (right)

Source: Butterfly working group Natuurpunt, INBO

Overwintering waterfowl

European Biodiversity Strategy 2020

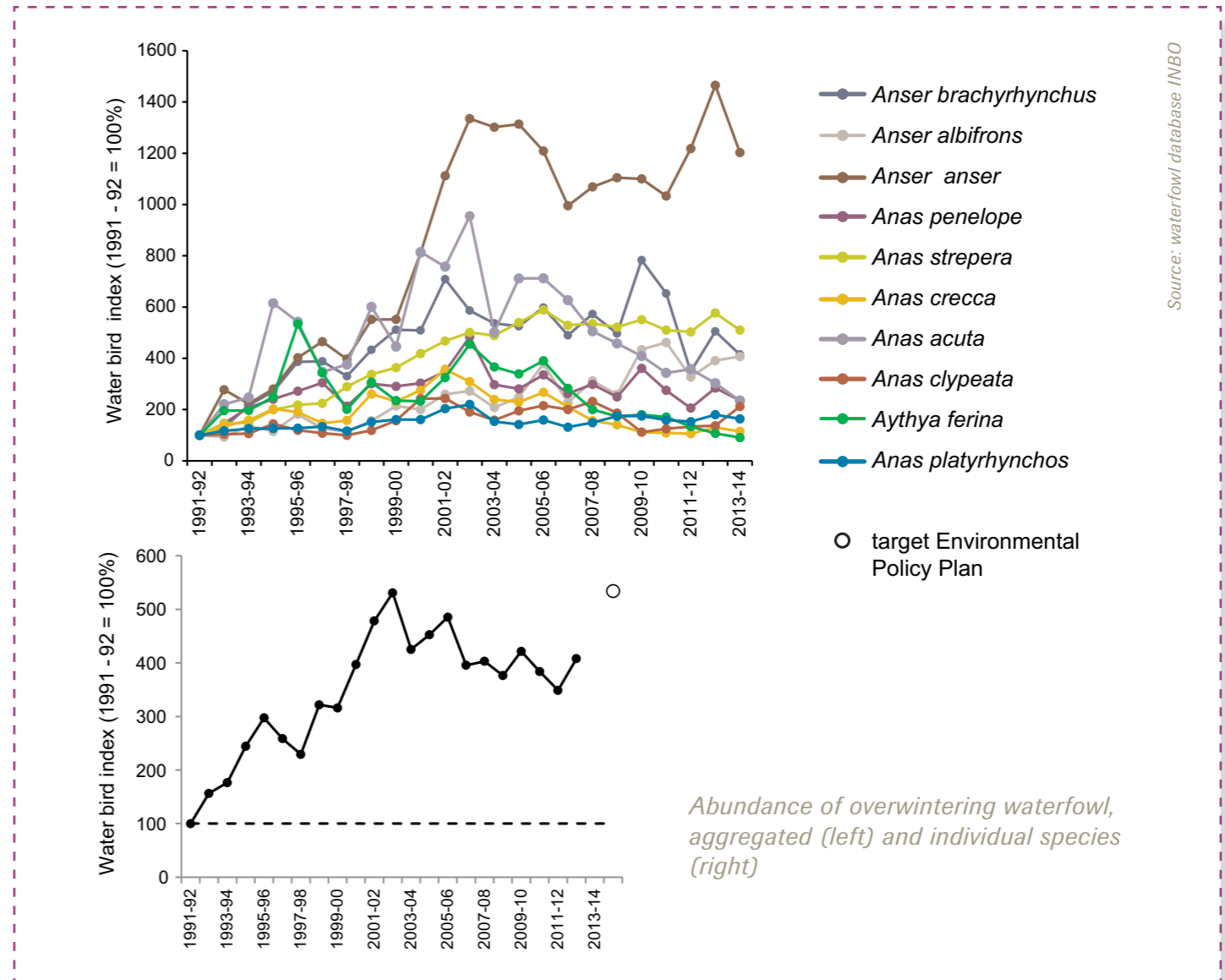
By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems. (SEBI 01)

Target 2

The overwintering water bird index describes the number of overwintering water birds based on 6 mid-monthly surveys.

The abundance of water birds increased fivefold between the winter of 1991-1992 and the winter of 2002-2003 and declined again afterwards, but this varies from species to species.

The abundance of waterfowl in Flanders is a combined effect of north-western European and regional factors. In north-western Europe almost all goose and duck species increased in number during the last 20-30 years. Possible causes are better protection of the species (reduced hunting) and their habitat (protection of wetlands), and increased food availability. In addition, the trends in Flanders are at least partially determined by local changes in water quality, human activities and conservation management. These factors can have a big influence on the capacity of areas for waterfowl, mainly through changes in the food supply (as recently seen along the river Scheldt). It is likely that climate change is also an increasingly important factor in regionally changes in abundance and distribution.



Trend: significant exponential increase

Red List amphibians and reptiles

European Biodiversity Strategy 2020

Target 1

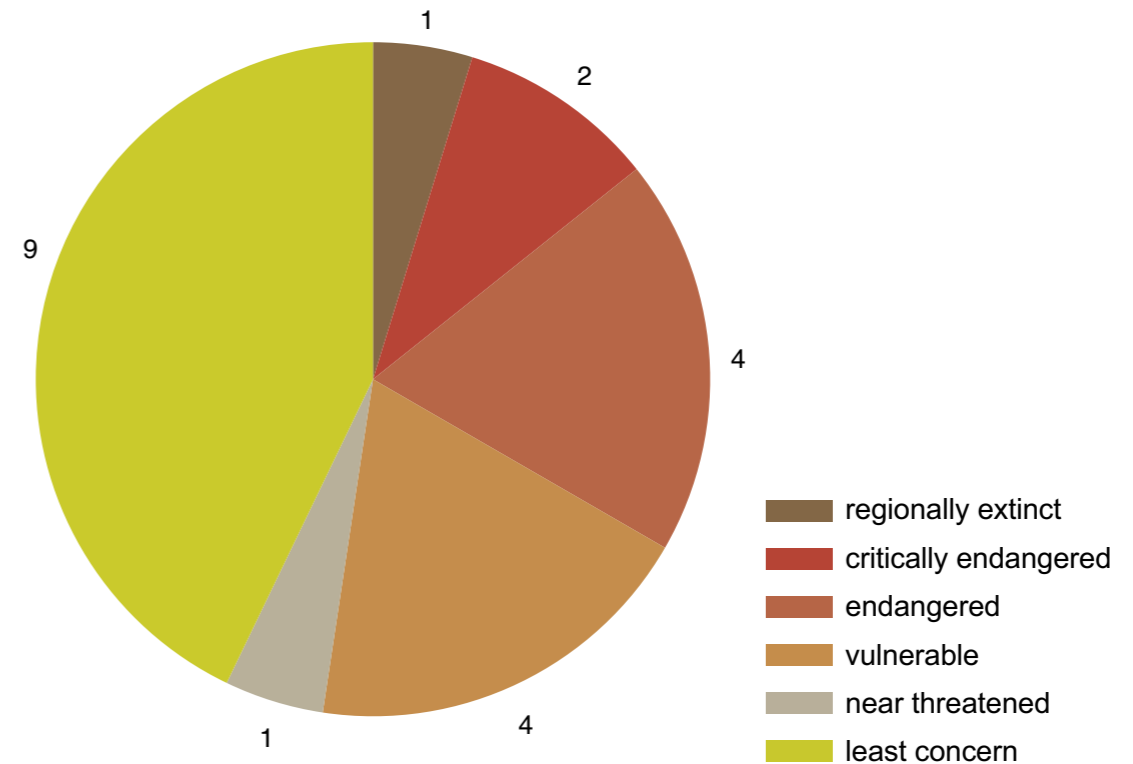
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Red lists indicate the risk of species extinction in Flanders. This risk assessment is based on objective and international criteria issued by the International Union for Conservation of Nature (IUCN).

Out of 22 indigenous amphibians and reptiles ten are threatened: two species are 'Critically endangered', four are 'Endangered' and four are 'Vulnerable'. One species is 'Near threatened'. The remaining nine species are considered as being 'Least concern'. This means that 50% of all species in Flanders is threatened and/or extinct (Jooris *et al.* 2012).

The cause of this continuous decline is mostly the decrease of suitable habitat, resulting in the isolation of populations. Because of a strong reduction in the number of individuals and the lack of connection elements, hardly no new areas can be colonized. Furthermore genetic effects can have catastrophic consequences in these small populations. Deterioration of the water quality in the reproduction zones can play an important role with the 'Critically endangered' *Pelobates fuscus* and the 'Vulnerable' *Triturus cristatus*. An increase of nutrients in the water and an increased predation by fish prevent successful reproduction. Specific management of these water bodies can provide success in short time, as in the case of *Hyla arborea*. Removing fish in the reproduction waters resulted in a spectacular increase of the number of adults for these species, with a colonization of new areas as a consequence.

Trend: no correct trend determination possible



Red List amphibians and reptiles

Source: *Hyla* (amphibian and reptile working group Natuurpunt), INBO

Red List butterflies

European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

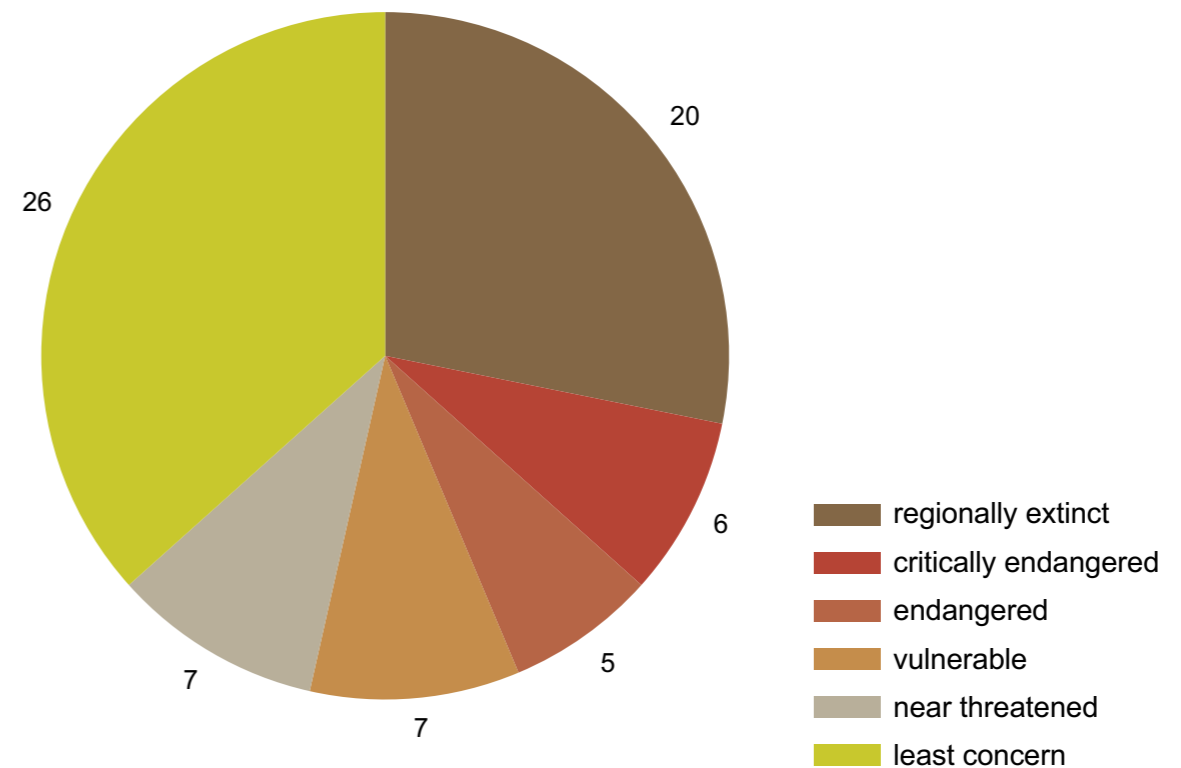
Red lists indicate the risk of extinction of a species in Flanders. This risk assessment is based on objective and international criteria of the International Union for Conservation of Nature (IUCN).

Out of 71 butterfly species that have been observed in Flanders since the beginning of the last century, 20 species have gone extinct, 18 are threatened (six species are 'Critically Endangered', five are 'Endangered' and seven are 'Vulnerable'). A further seven species are 'Near threatened'. The remaining 26 species are considered as being 'Least Concern'. This means that 66% of all butterfly species in Flanders are threatened and/or extinct (Maes *et al.* 2012).

Compared with the Red List of 1999, the declining trend is continuing for a large number of species: four species have gone extinct between 1994 and 2003 and twelve species are doing worse than in the previous Red List. Especially species from heathlands (e.g., *Hipparchia semele*), flower-rich nutrient-poor grasslands (e.g., *Melitaea cinxia*) and large woodlands (e.g., *Nymphalis antiopa*) continue to decline. Additionally, some previously common species such as the *Gonepteryx rhamni* and the *Lasiommata megera* are showing string declines recently.

The causes of these continuing declines are eutrophication, a decline in nectar sources and the ongoing fragmentation of natural habitats in Flanders. Restoration measures should focus on the conservation of large and well-connected natural areas. Nature management should take the specific ecological resources of butterflies into account. Additionally, an improvement of the overall environmental quality (e.g., reducing nitrogen deposition) would certainly favor butterflies and biodiversity in general.

Nine species are doing better compared to a decade ago. *Carcharodus alceae*, for example, recently colonized Flanders from more southern areas. For such mobile species, but also for a couple of woodland species, biotope quality has improved slightly, but also warmer summers have resulted in an increase of warm-loving species such as the *Issoria lathonia* and the *Aricia agestis*.



Red List butterflies

Source: Butterfly working group Natuurpunt, INBO

Trend: no correct trend determination possible

Red List ladybirds

European Biodiversity Strategy 2020

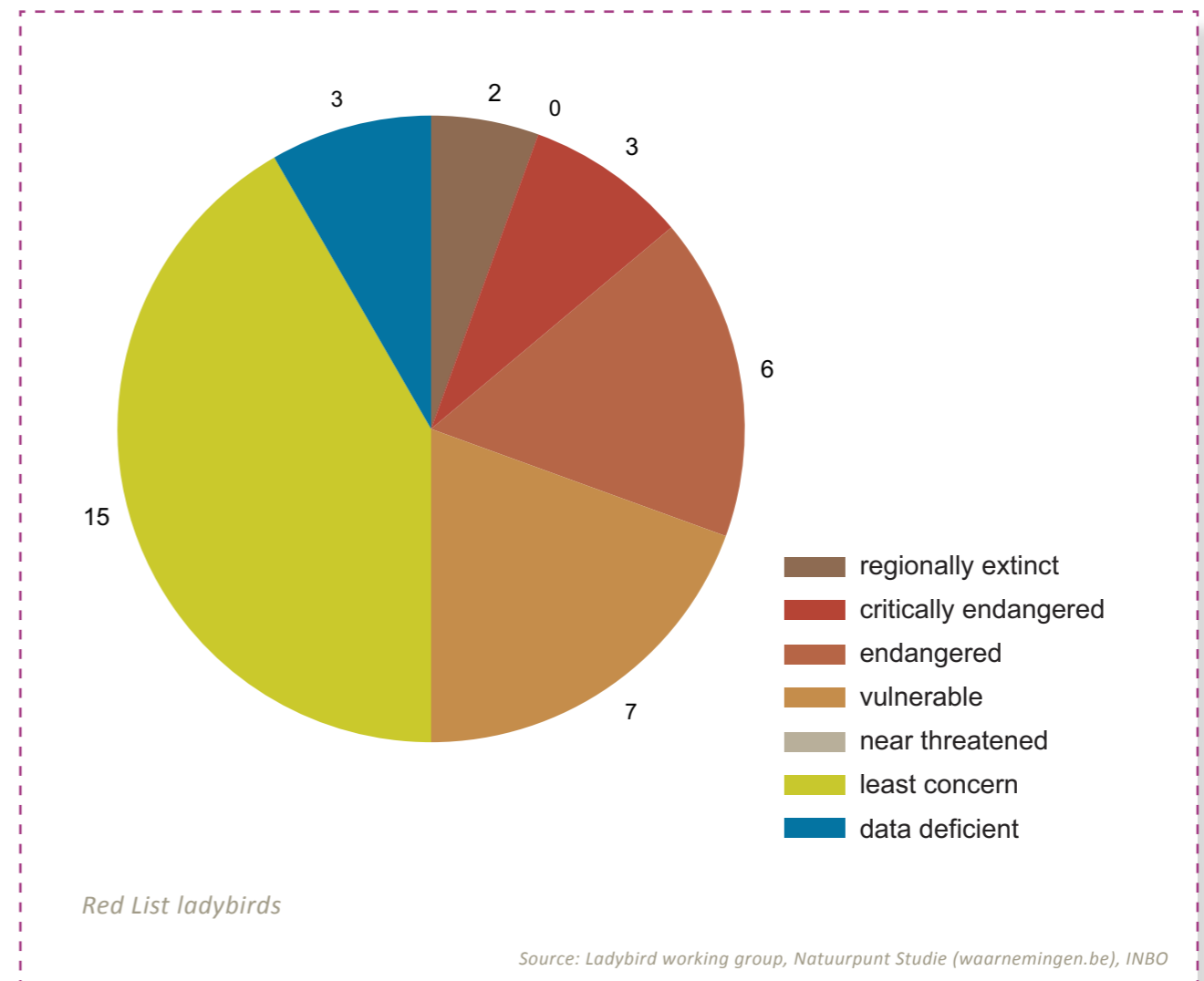
Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Listing species according to their relative risk of extinction and comparing regularly updated Red Lists, is a powerful tool in assessing the efficacy of species conservation policies. The Red List assessment in Flanders is based on objective and internationally accepted criteria of the International Union for the Conservation of Nature (IUCN). These were applied on the larger, easily recognizable species from the subfamilies Coccinellinae, Chilocorinae and Epilachninae for which good data were provided by a large scale citizen science survey. The assessment compared the periods 1990-2005 and 2006-2013. Non-native species such as the invasive Asian harlequin ladybird are not scored with the IUCN methodology.

Of the 36 species of ladybirds observed since the beginning of the last century in Flanders two are now regionally extinct. Three species are 'Endangered' and six species are 'Vulnerable'. A further seven species are considered 'Near threatened' and the remaining 15 species were assessed as 'Least concern'. For three species insufficient information is available about their status in Flanders. In total 31% of all species are threatened (25%) and/or extinct (6%).

The percentage of threatened ladybird species is similar to other terrestrial insects groups (Adriaens *et al.* 2015). Since this represents the first Red List assessment for ladybirds no trend can be discussed for this indicator. Threatened ladybirds in Flanders are mostly confined to rare habitats with specific microclimates such as dry heathlands, nutrient-poor dry or wet grasslands, marshes etc. Often such species also display specific life history traits such as habitat and/or dietary specialisation or myrmecophily. The principal threats include habitat loss, loss of habitat quality and non-native species. Some species require a customized nature management. Many species benefit from simple measures enhancing ecological quality in parks, gardens and public greenery. These include e.g. using native trees and shrubs that are of value to ladybirds at some stage of their life cycle or avoiding disturbance of ground cover in winter which can provide shelter for overwintering ladybirds (Adriaens *et al.* 2014).



Trend: no correct trend determination possible

Red List water bugs

European Biodiversity Strategy 2020

Target 1

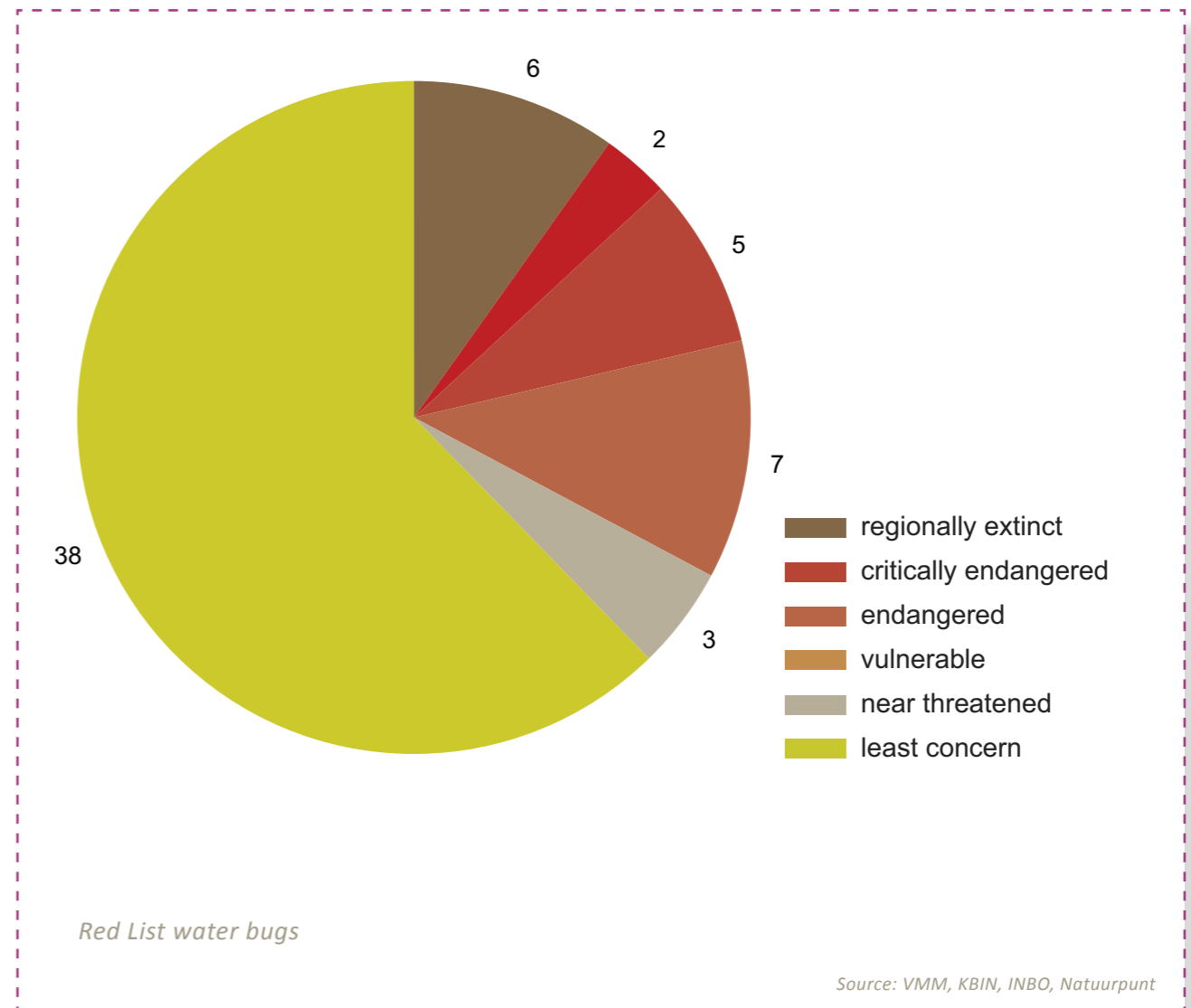
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Listing species according to their relative risk of extinction and comparing regularly updated Red Lists, is a powerful tool in assessing the efficacy of species conservation policies. The Red List assessment in Flanders is based on objective and internationally accepted criteria of the International Union for the Conservation of Nature (IUCN). The new Red List of water bugs (*Heteroptera: Gerromorpha* and *Nepomorpha*) compares the periods 1989-1999 and 2000-2011.

Of the 62 species of water bugs observed since the beginning of the last century in Flanders six are now regionally extinct. Two species are 'Critically endangered', five species 'Endangered' and seven species are 'Vulnerable'. A further three species are considered 'Near threatened' and the remaining 38 species were assessed as 'Least concern'. One species was considered vagrant. The new Red List shows that 32% of all water bugs are either threatened (22%) or regionally extinct (10%) (Lock *et al.* 2013). This relatively high proportion confirms the sensitivity of aquatic environments for environmental pressures.

Despite the different methodologies applied for drafting the former Red List (Bonte *et al.* 2001), both lists are remarkably similar. The proportion of threatened species did not change considerably. There was however a marked increase in distribution range of water bugs of running waters due to a general improvement in water quality (Lock *et al.* 2013). As a result, three species improved their status. *Aphelocheirus aestivalis* was downgraded from critically endangered to near threatened, *Velia caprai* from vulnerable to least concern and *Aquarius najas* from critically endangered to least concern.

Some species, however, remain rare and are still under threat. This includes stenotopic species from fens such as *Notonecta oligua* and *Cymatia bordsdorffii*, and species of shallow lakes with abundant macrophytes. Also species of forest pools and ditches (e.g. *Gerris gibbifer*, *G. lateralis*) and water bugs from slightly brackish waters (e.g. *Corixa panzeri*, *Sigara stagnalis*) deserve extra attention.



Trend: no correct trend determination possible

Red List freshwater fish

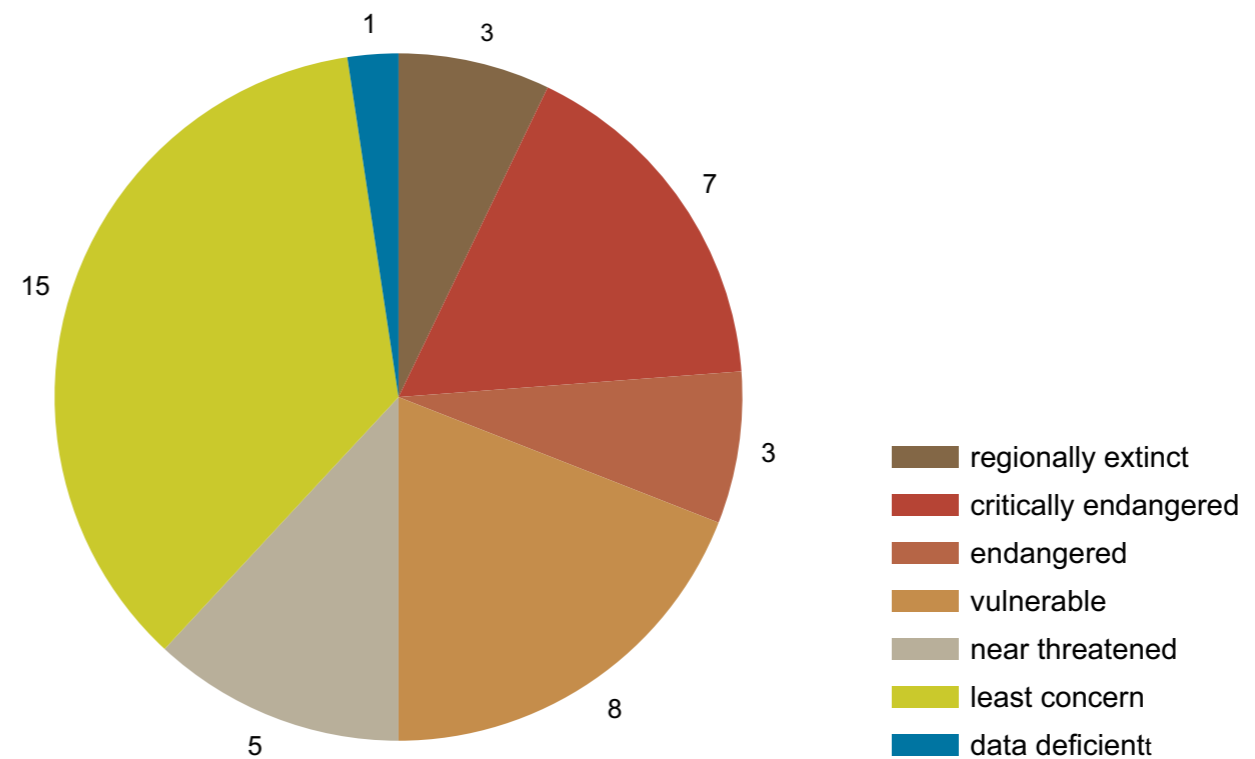
European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Red Lists point out the chance extent of species becoming extinct in Flanders. Objective and internationally accepted criteria from the International Union for Conservation of Nature (IUCN) are used for this indicator. Regional IUCN criteria were applied to categorize 42 indigenous freshwater fish species in Flanders into Red List categories. **As such, three species are assessed as regionally extinct, eight as 'Critically endangered', two as 'Endangered' and eight as 'Vulnerable'. A further five species are considered 'Near threatened', 15 species as 'Least concern' and one species is 'Data deficient'. In total, 62% of freshwater fish in Flanders is endangered or extinct (Verreycken *et al.* 2012; 2013).**

Recent improved wastewater treatment has led to the amelioration of the water quality of the Scheldt estuary in which some diadromous species such as *Petromyzon marinus* and *Alosa fallax* occur again. Thus, they disappear from the category Regional Extinct. As a result of several reintroduction programmes, *Leuciscus leuciscus* and *Leuciscus cephalus* are doing remarkably well while *Lota lota* has been taken out of the category Regional Extinct. A notable decline was noticed for *Anguilla Anguilla*: it entered the 'Critically endangered' category despite the annual stocking with glass eels.



Red List freshwater fish

Source: INBO, Natuurpunt, ANB

Trend: no correct trend determination possible

Red List mammals

European Biodiversity Strategy 2020

Target 1

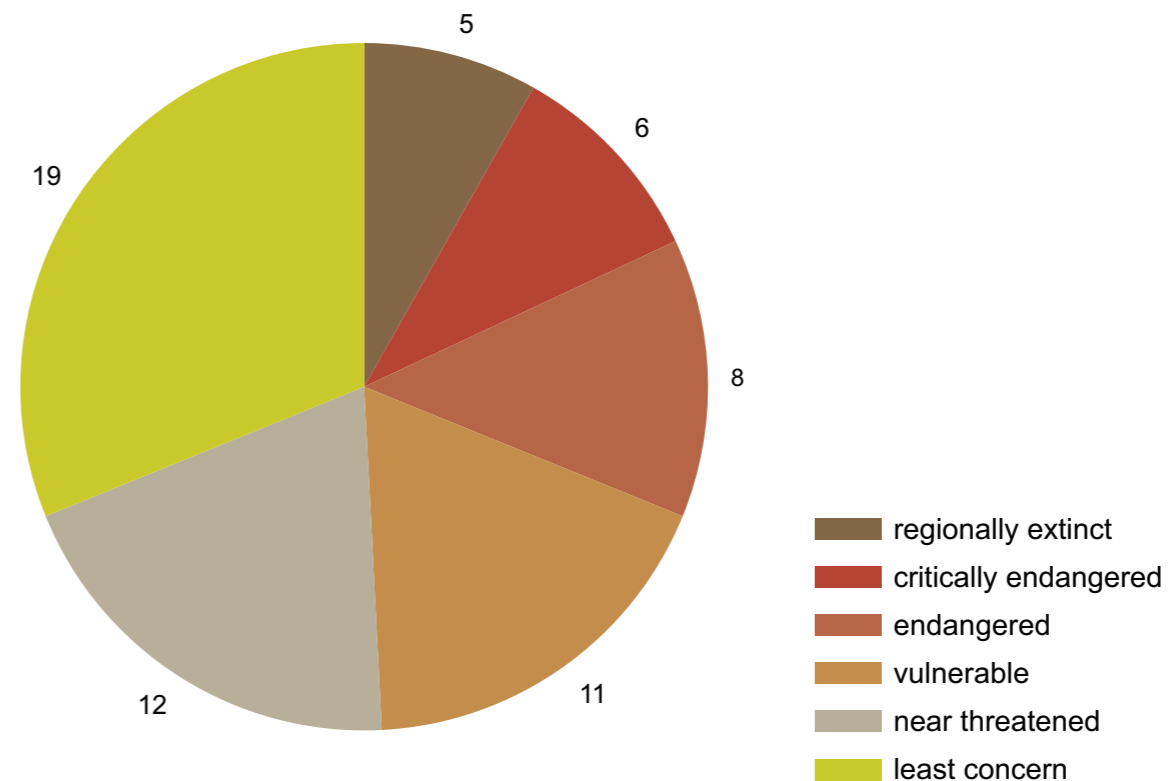
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Red Lists point out the chance extent of species becoming extinct in Flanders. Objective and internationally accepted criteria from the International Union for Conservation of Nature (IUCN) are used for this indicator.

Out of the 66 mammalian species that occurred since the beginning of the previous century in Flanders, five species have become extinct in the meantime, and 25 species are in danger: six are 'Critically Endangered', eight are 'Endangered' and 11 are 'Vulnerable'. A furthermore, 12 species (18%) are 'Near threatened'. The remaining 19 species (29%) are classified in the 'Least Concern' category. For five species 'Data deficient' is recorded (8%). Globally, 45% of all species is in danger and/or became extinct (Maes *et al.* 2014).

Some species like *Martes martes*, *Lutra lutra*, *Felis silvestris* and *Meles meles*, realized a comeback recently, although their population status still remains precarious. The distribution area of *Muscardinus avellanarius* and *Cricetus cricetus* is limited geographically; the latter has reached the threshold of extinction and needs a species specific management. Many other species show an insidious and unexplained decline, such as *Mustela putorius*, *Eliomys quercinus*, and several 'mice species' of which more than half of all bat species.

Trend: no correct trend determination possible



Red List mammals

Source: Natuurpunt, Bat working group, Barn owl working group, Likona, en INBO

Species status

European Biodiversity Strategy 2020

Target 1

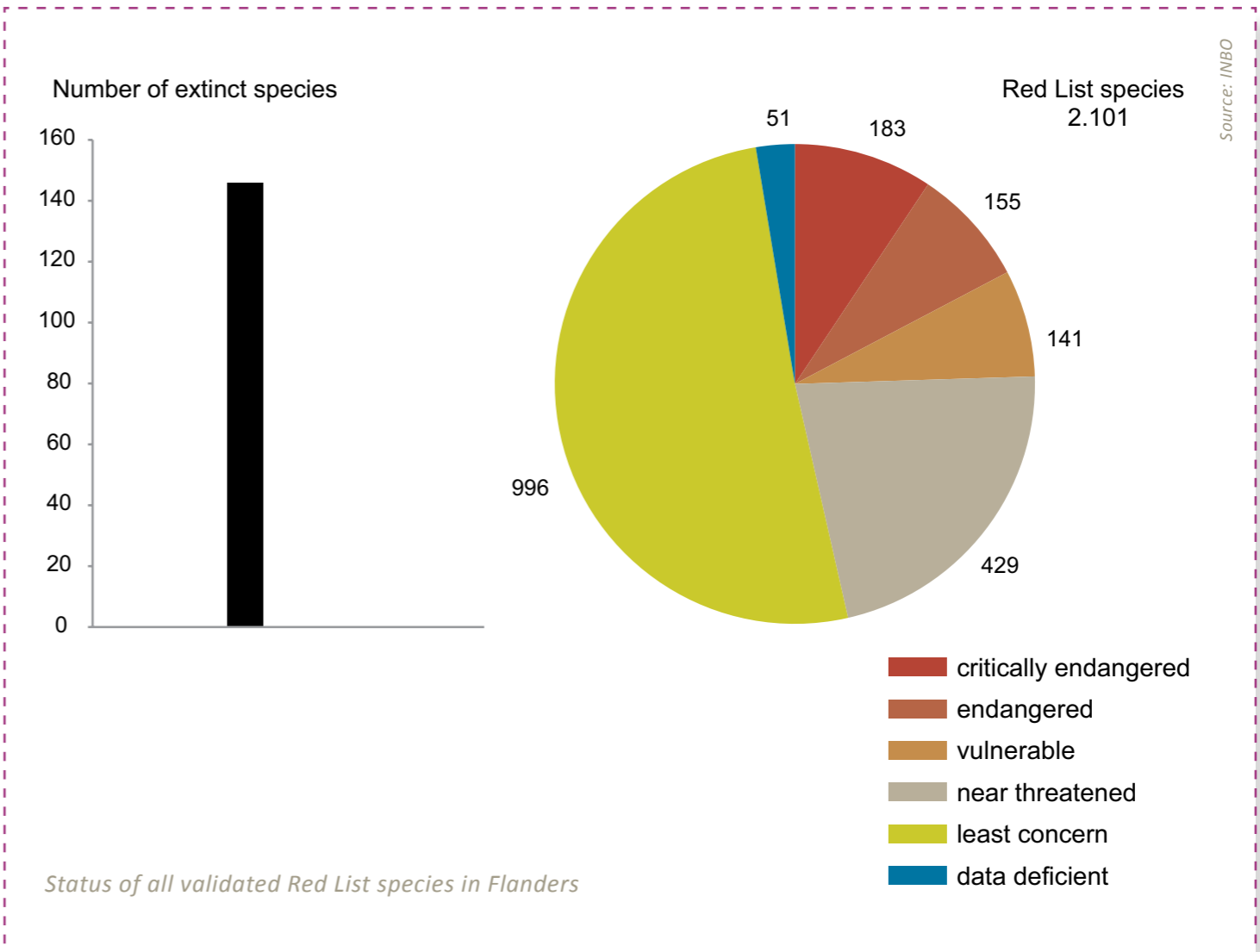
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

The status of a species is based on the categories defined by the International Union for the Conservation of Nature (IUCN). Red List species belong to the categories 'Critically endangered', 'Endangered' and 'Vulnerable'. According to the Flemish Decree on Species (1/09/2009), INBO has to draw up and validate Red Lists.

Validated Red Lists exist for amphibians, breeding birds, butterflies, vascular plants, dragonflies, ladybirds, ground beetles, reptiles, orthoptera (crickets, grasshoppers and locust), water bugs, mammals, freshwater fish. For spiders, ants, Dolichopodidae and Empididae non validated Red Lists exist. Because reliable and sufficient data are not available, these species can't be validated.

Of the 2.101 species on validated Red Lists, 146 became locally extinct during the last century. A total of 479 species (24%) are on the Red List and are vulnerable to extinction if necessary measures are not taken. The decline of these species is the result of the decreasing habitat area and a decline in habitat quality. Species associated with farmland are increasingly present on the Red List. Species associated with farmland are increasingly appearing on the Red List.

Trend: no correct trend determination possible



State and trend of ecosystem services

European Biodiversity Strategy 2020

Target 2

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

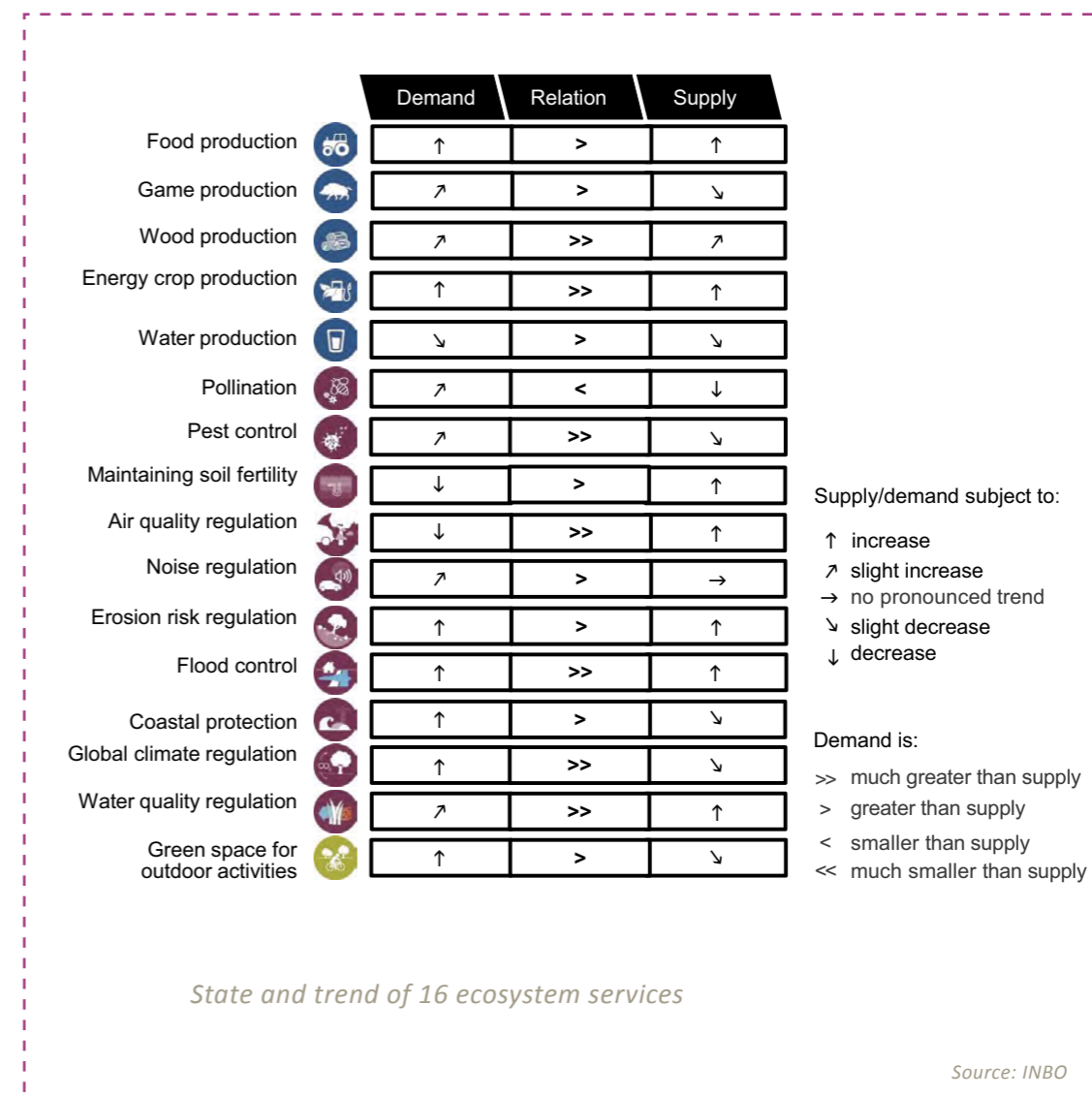
This indicator shows to state and trend of ecosystem services in Flanders.

The nature report 2014 examined the state of 16 ecosystem services (Stevens *et al.* 2014). The state of an ecosystem service is determined by the relationship between supply and demand, the trend in that relationship and the impact of the use of ecosystem services on the supply of other ecosystem services. **For 15 of the 16 ecosystem services, the demand exceeds always the supply, in seven of which greatly.** The trend in the supply of and demand for the 16 ecosystem services is variable. Both demand and supply show (slightly) increasing or decreasing trends depending on the ecosystem service. The demand is increasing more frequently (13 ESD) than the supply (7 ESD) (Jacobs *et al.* 2014).

Because demand exceeds supply (by a large margin in some cases), most ecosystem services in Flanders are used intensively or exploited. The demand for nearby green space for instance exceeds the supply: approximately 21% of the population in Flanders does not have green space for daily use within walking distance. Furthermore, about 55% of the area in Flanders is less attractive for recreation and experiencing nature. This open area is less attractive because of buildings, noise or because natural and /or cultural elements are missing. Safeguarding existing green spaces, improving accessibility and targeted creation of green infrastructure can generate high socio-economic benefits, especially in urban context where the space is scarce (Simoens *et al.* 2014).

The demand for various services is also increasing, and is no longer in equilibrium with the natural supply. For some ecosystem services this supply shortage is supplemented by imports (e.g. wood, drinking water), for other services (e.g. water quality regulation, air quality regulation, flood regulation or green space for outdoor activities) part of the social demand remains unfulfilled. Unmet demand often takes the form of environmental damage, economic damage or health costs. The supply deficit for some ecosystem services is also met by technological solutions, e.g. water treatment plants.

Trend: no correct trend determination possible



Number of species conservation plans

European Biodiversity Strategy 2020

Target 1

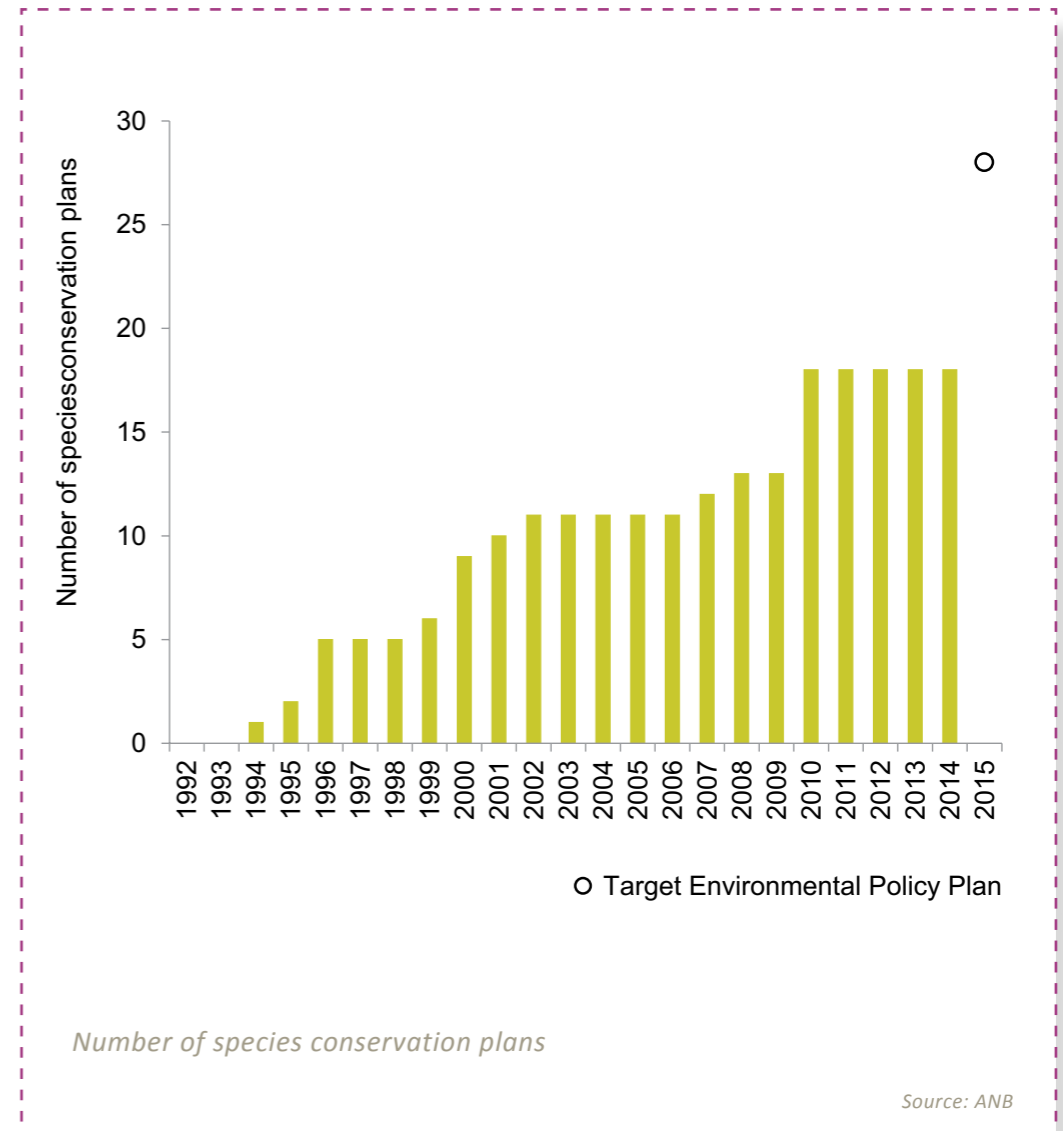
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

This indicator shows the evolution of the number of species conservation plans.

With the establishment and execution of species conservation plans and by taking conservation measures, with emphasis on the species of international importance, the Flemish government aims to halt the decline of these species and to ensure the favourable conservation status of viable populations, or to restore (the populations of) endangered species.

Up to the end of 2013 18 species conservation plans were drawn up for the following species or species groups: several *Chiroptera species*, *Cricetus cricetus*, *Meles meles*, *Muscardinus avellanarius*, *Vipera berus*, *Alytes obstetricans*, *Hyla arborea*, *Pelobates fuscus*, *Salamandra salamandra*, *Hipparchia semele*, *Lasiommata megera*, *Lycaena tityrus*, *Phengaris alcon*, *Satyrrium ilicis*, *Acrocephalus paludicola*, *Anser brachyrhynchus*, *Caprimulgus europaeus*, *Sanguisorba officinalis*. This is 64% of the target.

Since 2011, species conservation plans have been replaced by species protection programmes, eleven of which are under preparation and/or have been launched. Various LIFE projects, nature development projects, municipal species adoption plans and nature management plans also help protect species in Flanders. As a result, the number of initiatives to protect species exceeds in practice the number displayed through this indicator.



Trend: no correct trend determination possible

The number of sanitized fish migration barriers (Priority 1 of the strategic priority map)

European Biodiversity Strategy 2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems. (SEBI14)

Target 2

The indicator presents the number of sanitized migration barriers on the watercourses of the strategic prioritization map for fish migration. The BENELUX decision on fish migration states that 90% of the fish migration barriers categorized as first priority on the strategic priority map must be eliminated before December 31, 2015 (phase 1 - MINA plan 4 indicator 1) and the obstacles of second priority before December 31, 2021 (phase 2 - MINA plan 4 Indicator 2).

On a significant part of the watercourses of second priority, fish migration barriers have not yet been fully inventoried. Therefore it is currently not possible to assess the second indicator (phase 2).

The network of watercourses allocated to first priority is about 800 km long, and includes 51 fish migration barriers, of which 90% (or 46 barriers) should be sanitized by December 31, 2015. These 46 barriers include 35 priority migratory barriers defined in the eel management plan. On December 31, 2014, a total of 18 of the 46 (39%) barriers of phase 1 were remediated. Of the 35 high priority barriers of the eel management plan, however, only 11 (31%) were sanitized. Hence, by the end of 2015 still 24 barriers included in the eel management plan and four other bottlenecks in waterways of first priority need to be sanitized. The total number of bottlenecks may change as they sometimes naturally disappear or may turn out to be less problematic after in depth assessment.

Considering the current efforts in sanitizing barriers, phase 1 of the Benelux decision probably will not be achieved. Besides, the inventoried fish migration barriers of phase 2 will probably be sanitized only after 2021. The main bottlenecks remain available budgets, staff capacity and societal considerations.



Trend: significant increase

Conservation status of species of European interest

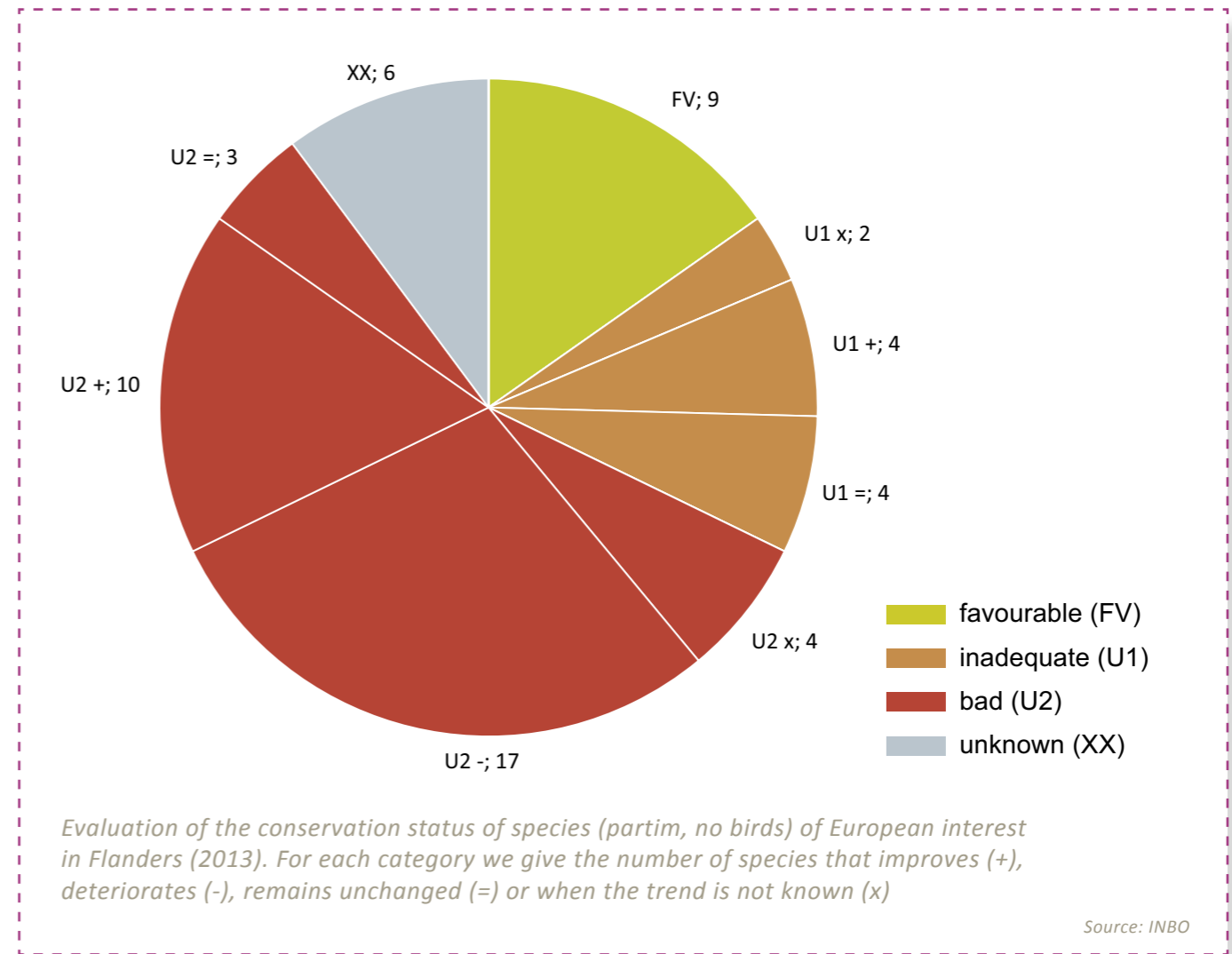
European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

The main goal of the Habitats Directive is to maintain a 'favourable' conservation status of selected species. These species are assumed to be endangered and Europe should play an important role in their conservation. Generally these are species living in specific habitats. The evaluation of the conservation status is based on four criteria set down by Europe. These are the population of the species, its distribution, the state of its habitat and its future prospects.

In Flanders, only nine species (three amphibians), one fish and five bats) have a favourable conservation status. For more than half of the species (34 on 59) the conservation status is poor and for nine species (16%) the status is inadequate. For six species there was insufficient data to evaluate the status. Compared with 2007, the conservation status of 14 species improved, but at the same time the situation for 17 species deteriorated (Louette *et al.* 2013).



Trend: no correct trend determination possible

Conservation status of habitats of European interest

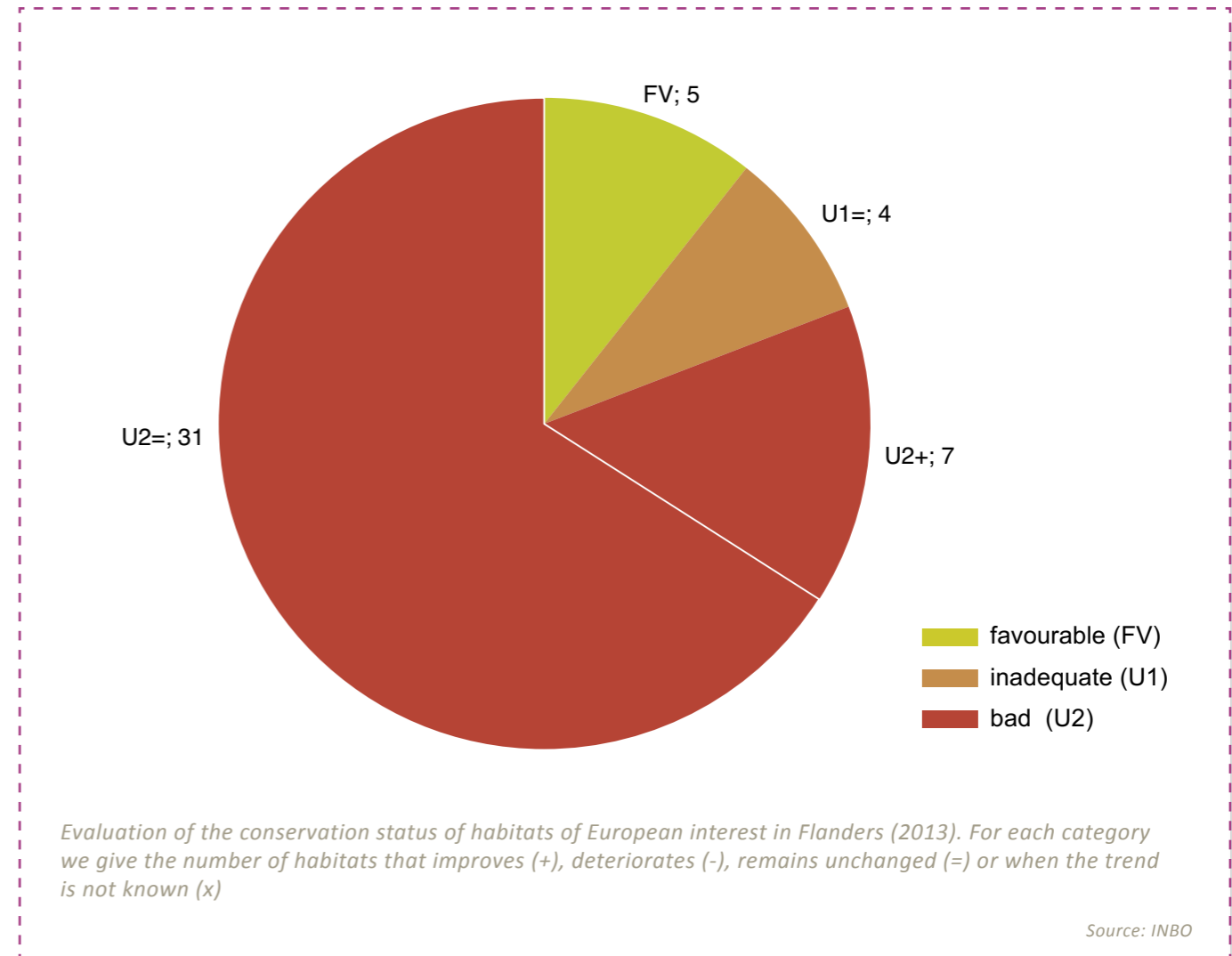
European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

The main goal of the Habitats Directive is to maintain a ‘favourable’ conservation status of selected habitats. These habitats are assumed to be endangered and Europe should play an important role in their conservation. Generally they are very specific habitats. The evaluation of the conservation status is based on four criteria set down by Europe. These are the area of the habitat, its distribution, its quality and its future prospects.

More than three-quarters of the habitats (38 habitats) are of poor conservation status and 9% (four habitats) have an inadequate conservation status. The latter comprise one peat and marsh habitat, one coastal dune habitat, one heathland, one grassland and one aquatic habitat. **Consequently, only five habitats have a favourable conservation status**, these being one saline habitat (mudflats and sandflats not covered by seawater at low tide), one coastal dune habitat (dunes with sea buckthorn), one aquatic habitat (Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.), one grassland habitat (*Rupicolous calcareous* or basophilic grasslands of the *Alyso-Sedion albi*) and one cave habitat (caves not open for public). For seven habitats the situation on the field improved slightly, compared with 2007 (Louette *et al*). 2013.



Trend: no correct trend determination possible

Status breeding birds of European importance

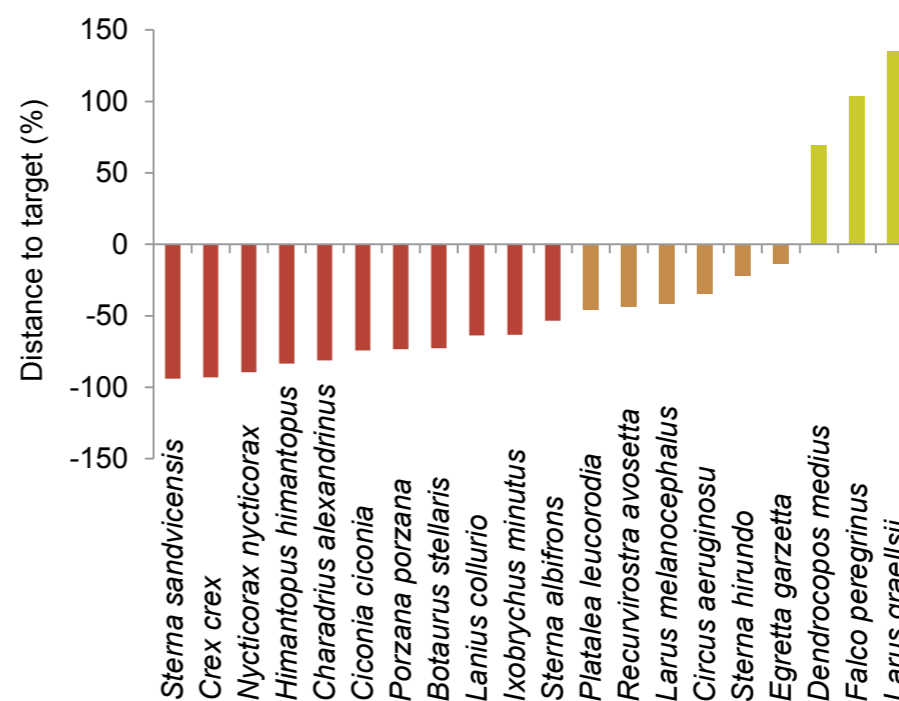
European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Population targets have been formulated for 28 breeding bird species, 27 of the Annex I of the Birds Directive and one internationally important species, *Larus fuscus*. **When comparing for 20 yearly monitored species the numbers of breeding pairs during the period 2007-2012 to the target numbers, we can conclude that population goals are met for three species (Anselin *et al.* 2013). For another three the goals were met in one or two years during the six year period. For 14 species however, there is still a large gap between actual numbers and the goals.** Five of the remaining seven species have larger populations that are not monitored each year. Their average number of breeding pairs for the period 2007-2012 compared to the target number suggests that the target is met for four of them. Two species with population goals that are irregular or very scarce breeders are still between 90 and 100% away of their goals. Some forest breeding species seem to do rather well. It is however clear that for most of the other species, although some of them are slowly increasing in numbers, the population is actually depleted or too low and there is still a long way to go. For most of them, nature development and large nature restoration projects could help to reverse negative trends. Certain species with large homeranges are often in need of a better general quality of their environment. Increasing the quality of mosaic farmland landscapes should also be another important goal for the future.

Trend: no correct trend determination possible



Evolution 'distance to target' breeding birds of European importance (2008-2013)

Source: Monitoring project Special Breeding Birds, INBO, KBIN (*Falco peregrinus*)

Status wintering waterbirds of European importance

European Biodiversity Strategy 2020

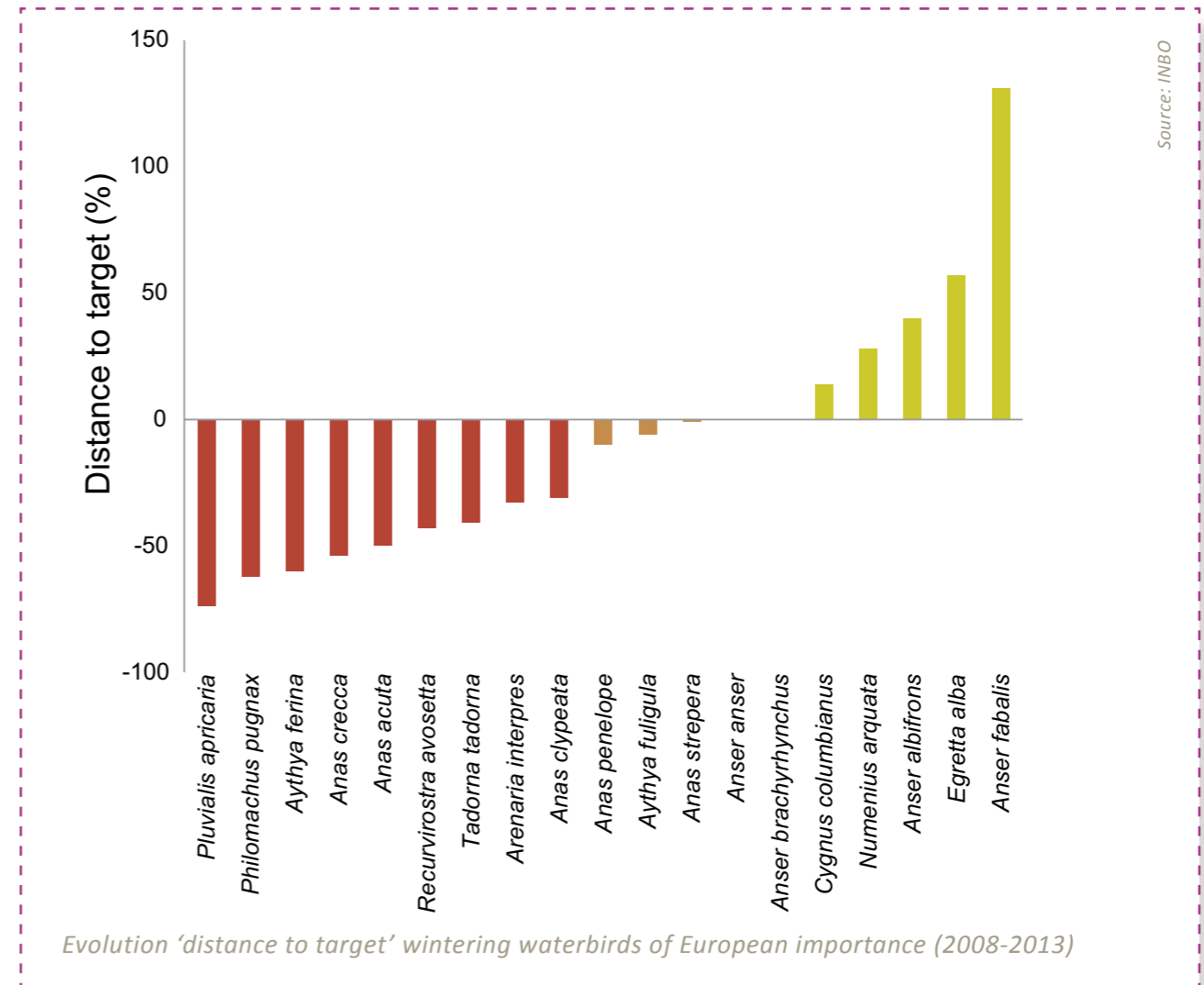
Target 2

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

Population targets haven been formulated for 19 wintering waterbird species that occur in internationally important numbers in Flanders. When comparing average numbers during the last five winters with these target values, we can conclude that population goals are met for seven species (Anselin et al. 2013). Numbers of four species are just below the targets. For eight species, there is a rather large gap between actual numbers present and population goals. Most of them showed a clear negative trend during the last ten years.

Trends of migrating waterbirds are often determined by a combination of different factors. For many species the Flemish trend reflects the changes in the European population. There are also increasing signs that recently large scale changes are taking place, mainly under the influence of changing climate. Milder winters mean that many species can shorten their migration route and can overwinter further north, resulting in lower wintering numbers in Flanders). But local and/or regional factors within Flanders are important for observed population changes too. The trends in Flanders for *Anas crecca*, *Anas acuta* and *Aythya ferina* have been strongly influenced by ecological changes in the Scheldt estuary. This has had a big impact on the numbers of waterbirds stopping over in the area. It is believed that nature development and restoration projects could help to reverse negative trends, as has been successfully demonstrated in several areas during the last years.

Trend: no correct trend determination possible



Sites designated under the EU Habitats and Birds Directives

European Biodiversity Strategy 2020

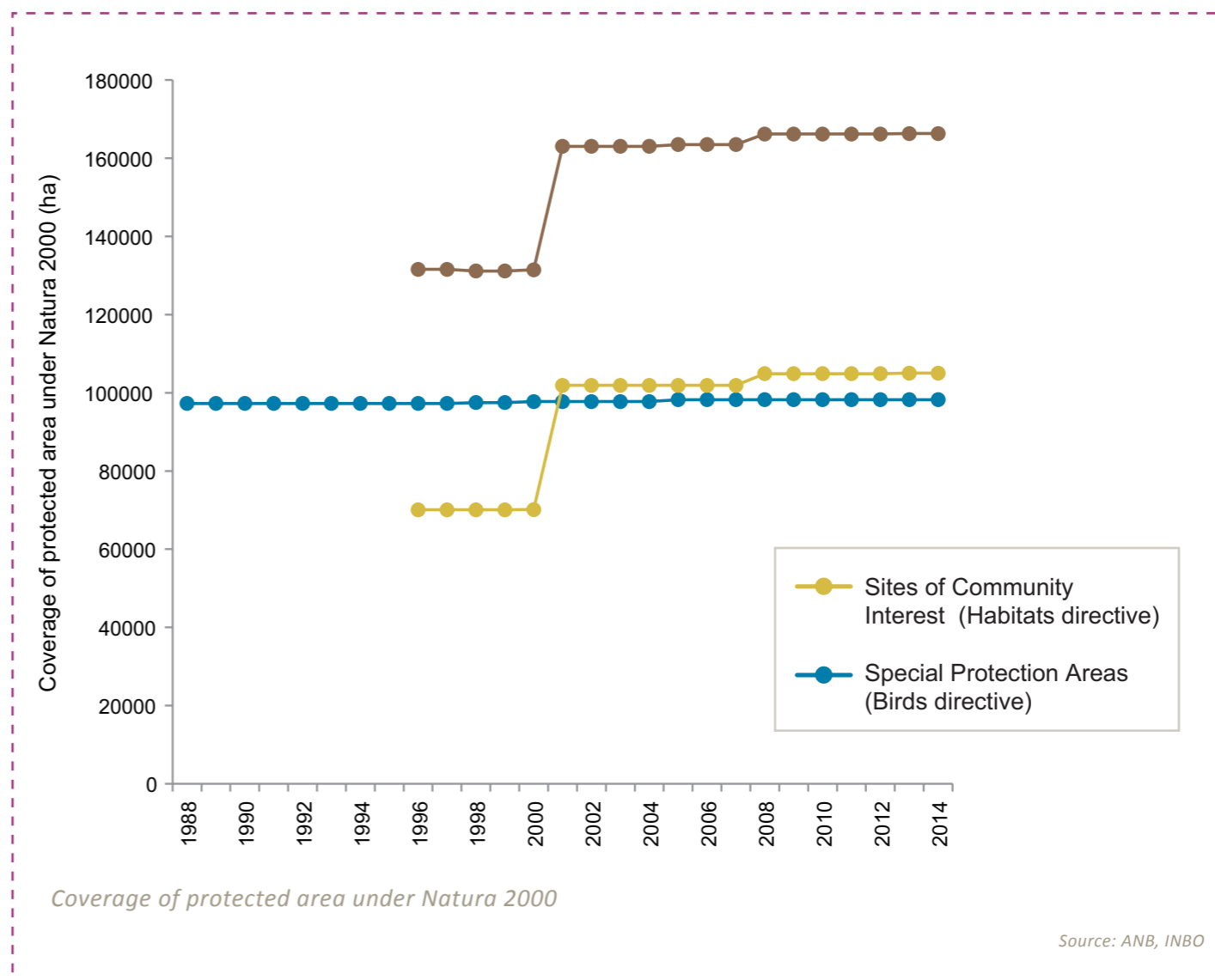
Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status. (SEBI 01)

The goal of the Birds and Habitats Directives is to protect a number of species and habitats which are threatened and for which Europe has an important role in their global conservation. To achieve this goal, the European ecological network 'Natura 2000' is being delineated. It consists of 26.000 areas designated according to the Birds Directive (Special Protection Areas) and the Habitats Directive (Sites of Community Interest). Together they cover 18% of the land surface of the EU.

In Flanders, 24 Special Protection Areas have been designated with a total area of 98.243 ha or 7,3% of the Flemish territory. There are 38 sites designated and put on the list of Sites of Community Interest by the European Commission. The Sites of Community Interest have a total area of 105.022 ha or 7,8% of the Flemish territory. The total Natura 2000 area comprises 166.322 ha (12,3% of the Flemish terrestrial area). Marine areas are not included, as they are under the jurisdiction of the Belgian federal government.

In 2013, there was an increase (133 ha) in the Sites of Community Interest. Floodplains along the river Maas were included.



Trend: no correct trend determination possible

Area with conservation management

European Biodiversity Strategy 2020

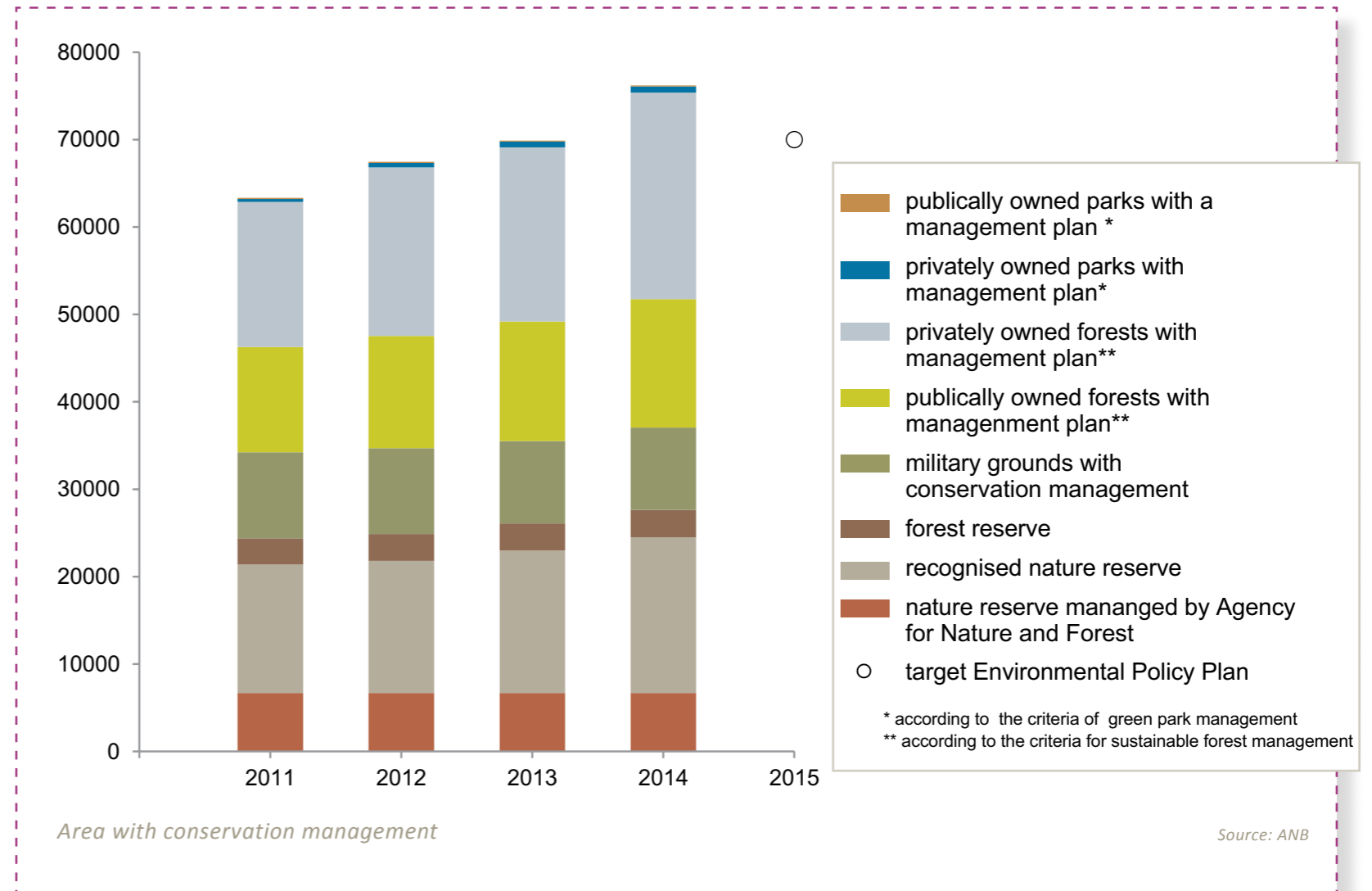
By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

The Flemish Environmental Policy Plan (2011-2015) targeted the creation of 70.000 ha of nature area with a conservation management plan by 2015. These include the officially recognized nature and forest reserves managed by non-governmental organisations (NGO), the nature and forest reserves managed by the Flemish governmental Agency, publically and privately owned forests and parks with a management plan and the military sites mainly managed for conservation.

At the beginning of 2011, the area with a conservation management plan covered 63.329 ha, or 90% of the target. By the end of 2014 this area increased with 12.877 ha to 76.206 ha, corresponding to 109% of the target.

Officially recognized nature reserves managed by non-governmental organisations increased by 21%. Publically and privately owned forests with a management plan increased by 22% and 42% respectively, accounting for the major part for the increase of area with conservation management. An increase was also observed for the total area of forest reserves and privately owned parks with a management plan. The total area of military grounds with nature protocol decreased by 4%.



Trend: no correct trend determination possible

Forest area

European Biodiversity Strategy 2020

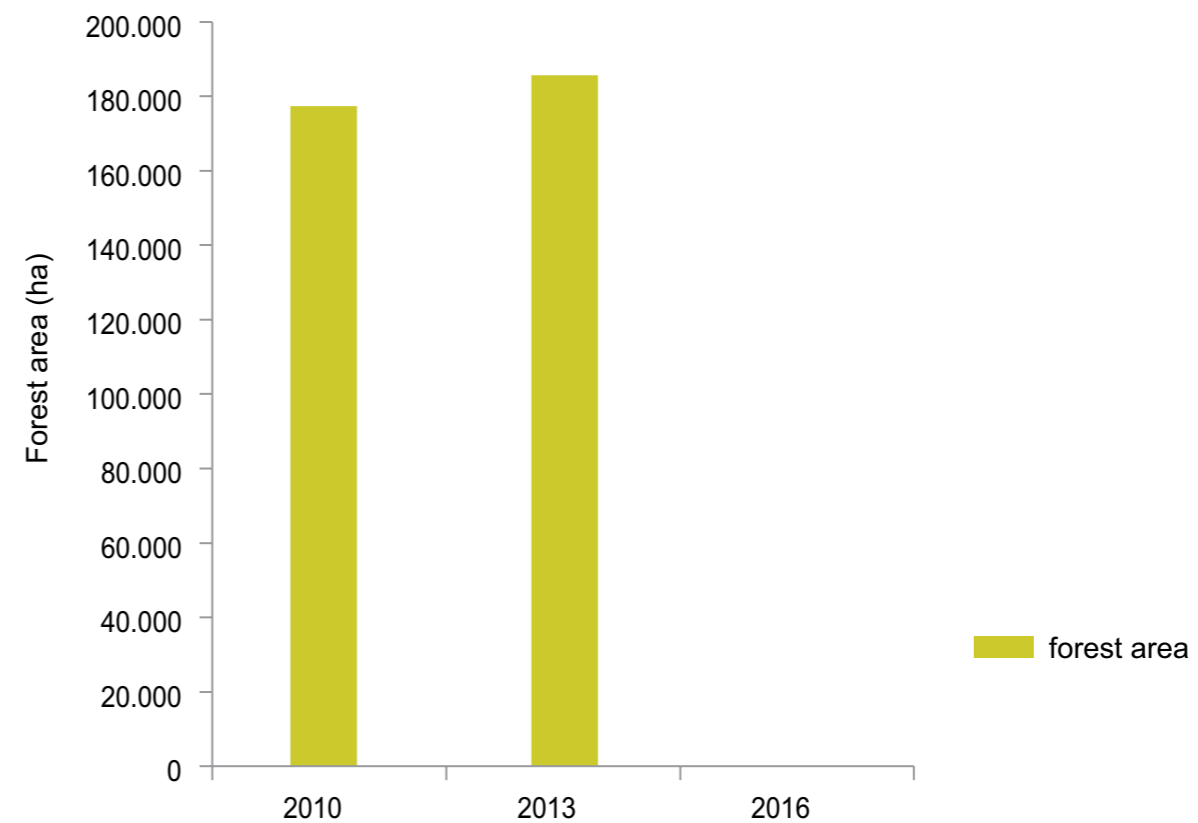
By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

The forest area indicator is a measure of forest cover in Flanders based on a new instrument using high-resolution digital aerial photos. These photos are analyzed using set criteria. This method shows the cover of groups of trees, which results in a higher surface area than what is considered forest in the Forest Decree. On the other hand this instrument does not display areas without trees, e.g. caused by felling provided in the management as forest, while this area is still forest in the Forest Decree.

Based on the latest measurement (2013), the area comprises 185.686 ha (confidence limits -14.163 ha and +1.803 ha, Van der Linden *et al.* 2013). Because the difference with the first measurement (= baseline in 2010, 8.362 ha) is located within the confidence interval, it is not possible to discern a trend, and as a consequence to determine whether or not forest area surface has increased since 2010.

Trend: no correct trend determination possible



Forest area in Flanders

Source: ANB

Area with accessible forests and nature reserves

European Biodiversity Strategy 2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

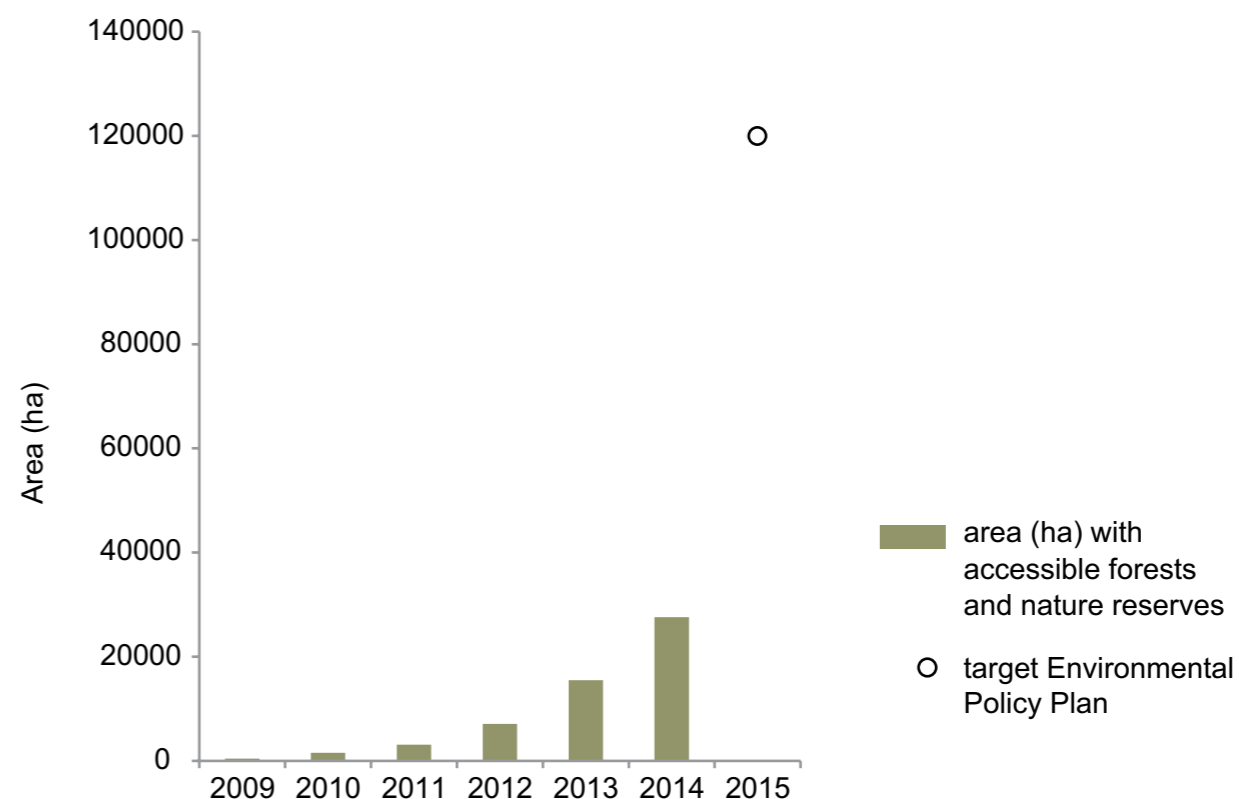
Target 2

This indicator shows the evolution of the area with accessible forests and nature reserves with an accessibility regulation, in accordance with the resolution of the Flemish Government (05/12/2008).

On top of a good and sustainable forests and nature reserves management, the Flemish Government also wants to pay attention to the accessibility of nature and forest areas. Both the Forest and the Nature Decree require basic accessibility. That means that all forest and nature reserve trails should be accessible to pedestrians. Private forest owners can always reverse this principle and unconditionally close their forests. Managers of forests and nature reserves can extend this fundamental accessibility by means of accessibility regulations. Through this instrument other users than pedestrians, e.g. horsemen, can be allowed, or certain areas can be indicated as play or bivouac zone.

In 2013 accessible forests and nature surface had more than doubled compared to 2012 and went from 7.074 ha to 15.486 ha. In 2014 the area increased with 12.094 ha, and the total area accessible forests and nature reserves reached 27.581 ha. This is 23% of the target. There is a significant increase but the target will most likely not be met. This has partly to do with the often lengthy consultation process that is necessary in the creation and adoption of an accessibility regulation.

Trend: significant exponential increase



Evolution of the area with accessible forests and nature reserves with an accessibility regulation

Source: ANB

Play areas in forests and nature reserves

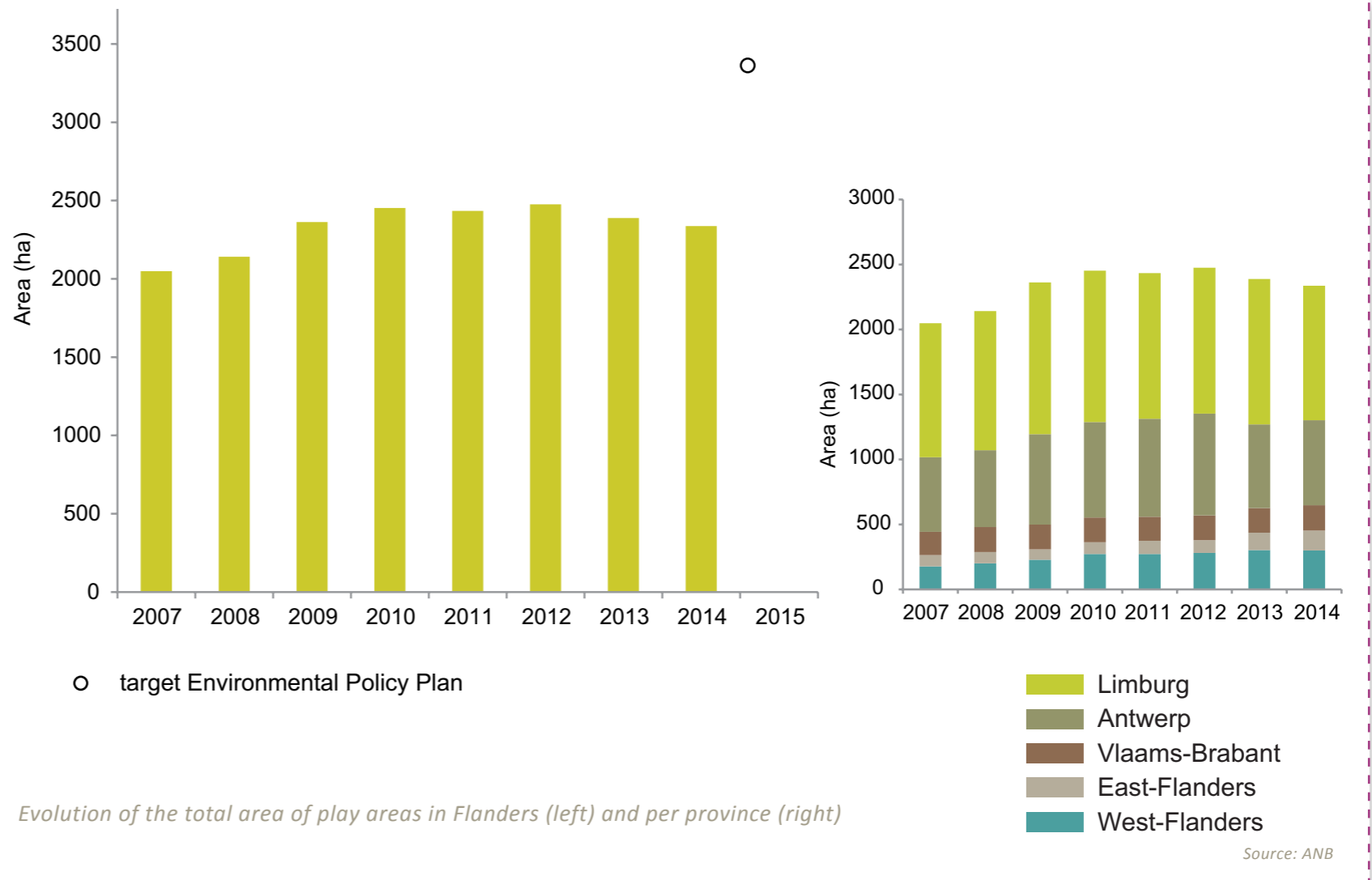
European Biodiversity Strategy 2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

Play areas are zones in forests (private and public) and nature reserves where one can be play without prior permission from the Agency for Nature and Forest and the owner. **In 2014 ± 2.337 ha were designated as play area.**

Most of these play areas (± 2.307 ha) are situated in forests. Since the modification of the Nature decree in 2006, it is also possible to designate play areas in nature reserves. In 2014 about 35 ha play grounds exist in nature reserves. Since 2013 summer play areas were created which can only be used in July and August. They are mostly used by the ca. 150.000 children and youngsters who are camping nearby during the summer months.



Trend: significant trend, top reached

Urban area with a city forest or a city forest project

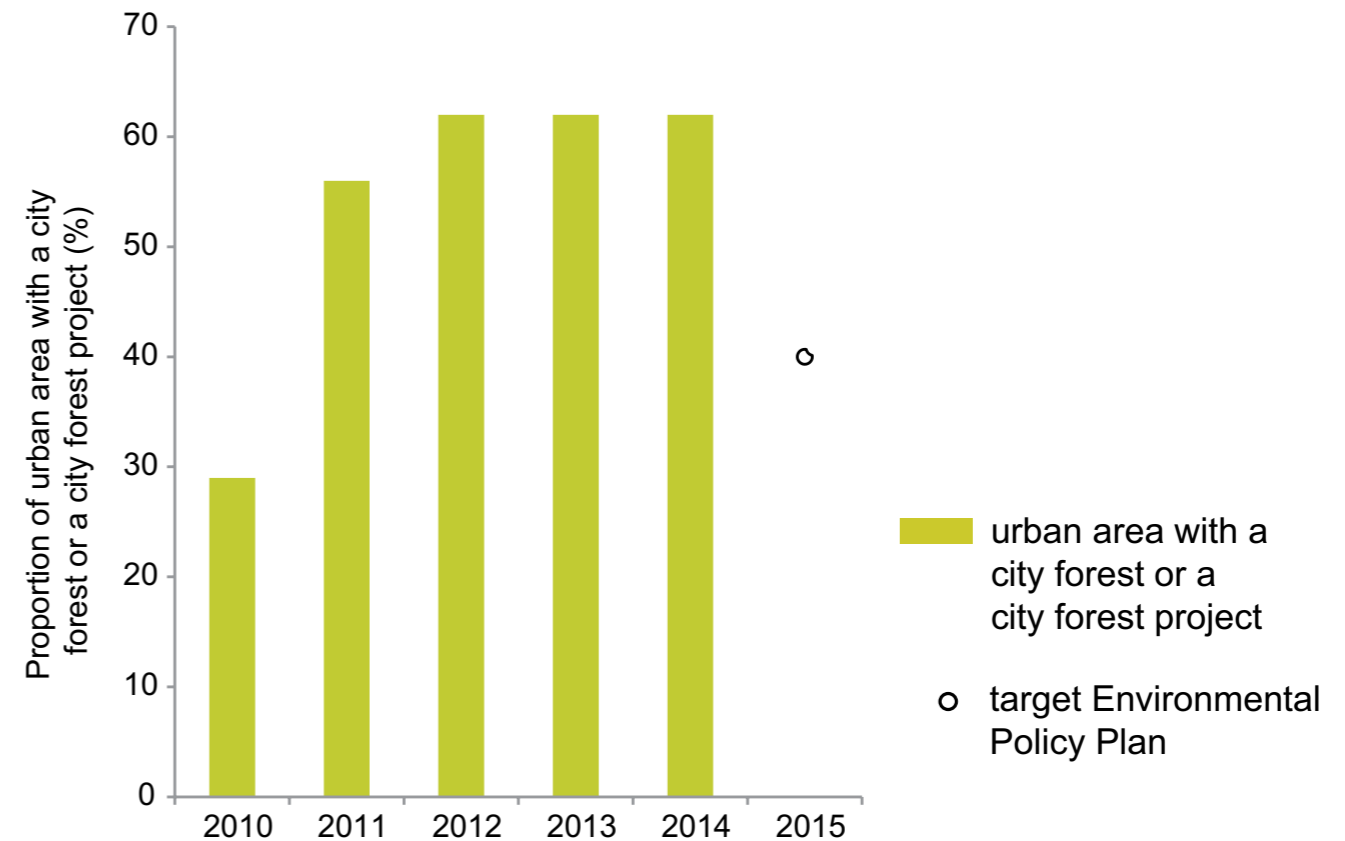
European
Biodiversity Strategy
2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

This indicator shows the evolution of urban area with a city forest or a city forest project.

Flanders is one of the most densely populated regions in the world. Approximately 21% of the population in Flanders does not have green space for daily use within walking distance (Simoens *et al.* 2014) at one's disposal. In order to increase the livability of cities in Flanders, the Flemish Government wants to create more accessible city forests near urban areas. A number of criteria drawn up by the Agency for Nature and Forest define a city forest. The surface, accessibility, approachability by bicycle and/or public transport, the presence of recreational functions and the presence of a reception desk are taken into account. **Since 2010, the number of urban areas with a city forest project or a city forest has been increasing. In 2014, 62% of the urban areas had launched a city forest project.**



Evolution of urban area with a with a city forest or a city forest project

Source: ANB

Trend: no correct trend determination possible

Southern-European dragonflies

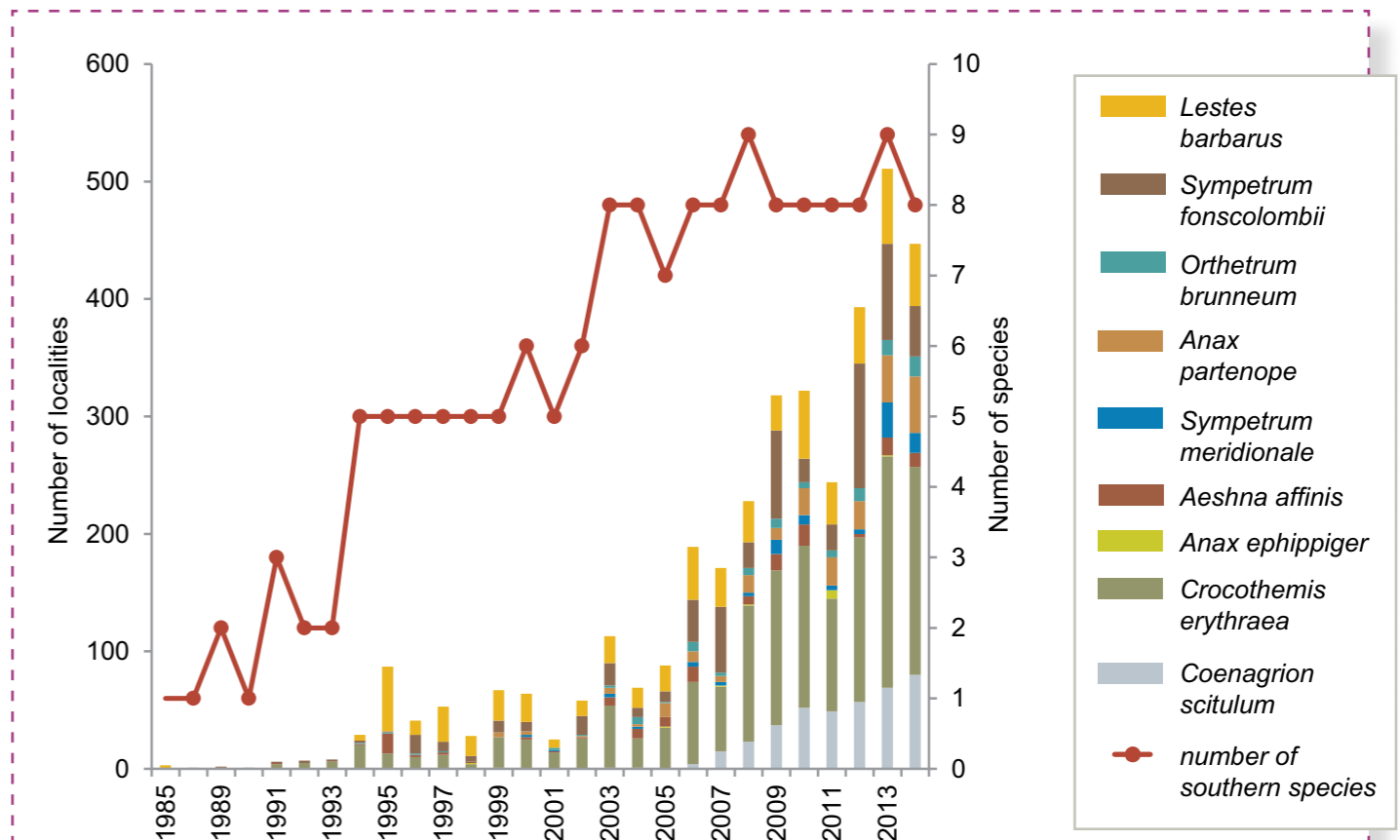
European Biodiversity Strategy 2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

Many southern dragonflies and damselflies (Odonata) have expanded their range northwards in Europe these last decades. Until 1980, established populations of these species were unknown in north-western Europe. Here we analyze the evolution of the number of localities since 1980 for each of the nine southern species and the total number of species observed.

The figure shows clearly that both the number of localities for each of the nine species as well as the total number of species has increased. The first increase started in 1994, followed by a steep increase from 2006 onward, both for the number of localities as for the number of species observed annually. Even though annual fluctuations occur, mostly due to weather conditions during the time of the flight season, the trend is clear and statistically significant. These nine southern species were never before seen on so many localities in Flanders as in 2015. Species as *Crocothemis erythraea* or the *Coenagrion scitulum* have many flourishing populations in Flanders several years already now (De Knijf et al. 2006, 2010).



Evolution of the number of localities per species and evolution of the total number of Southern-European dragonflies species

Source: Flemish Dragonfly Society and the common database of Natuurpunt Study and the Flemish Dragonfly Society, collected by waarnemingen.be

Trend: number of localities: significant increase
number of species: significant increase

Leaf phenology oak and beech

European Biodiversity Strategy 2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

This indicator examines the evolution of leaf development of oak and beech.

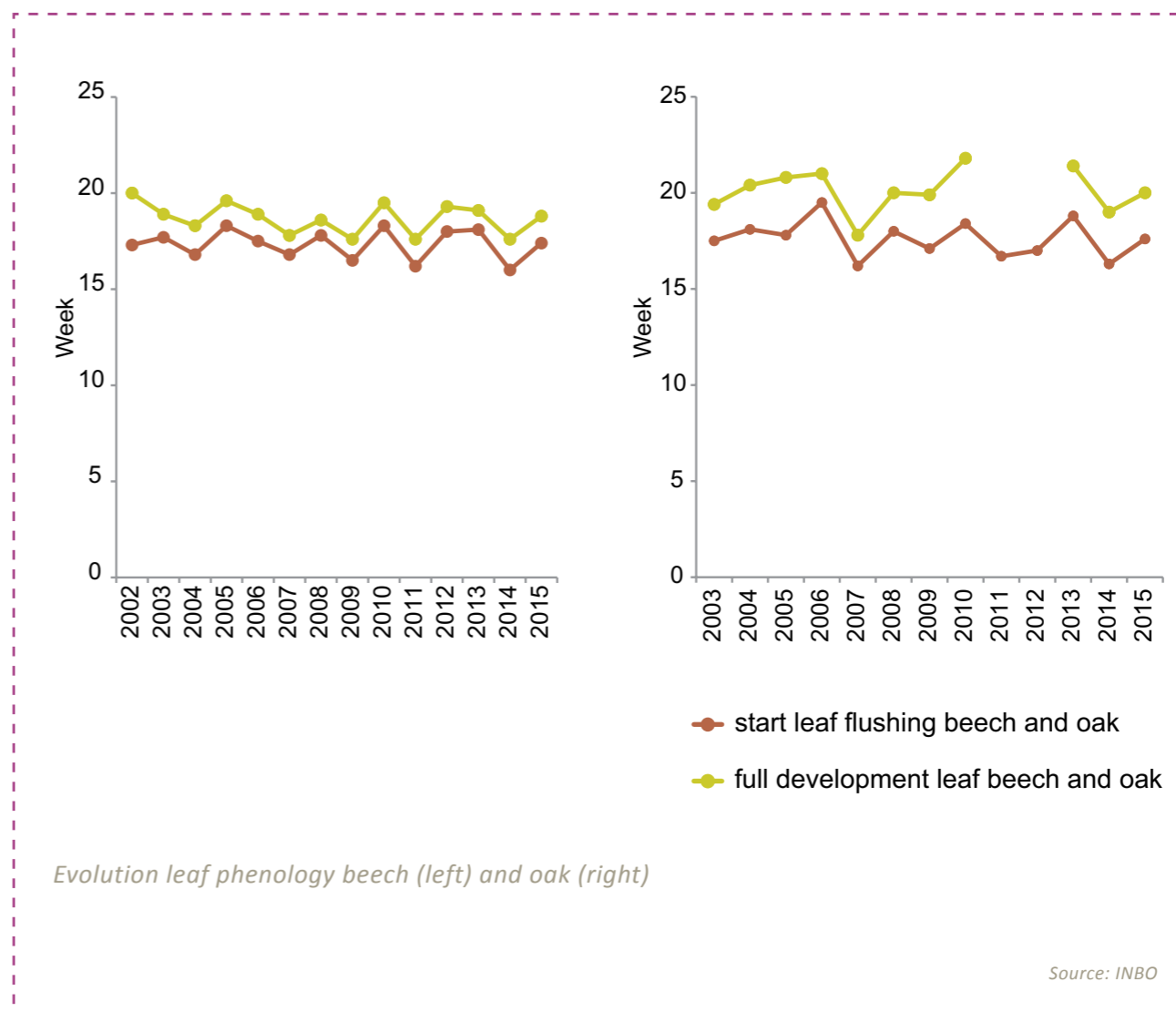
Since 2002, the Research Institute for Nature and Forest (INBO) records the phenological activities of a number of selected Oak trees in Meerdaalwoud (Flanders, Belgium) and Beech trees in Zoniënwoud. For this indicator we analyse the evolution of both the date of flushing and the date of full leaf development.

Climate change directly affects biodiversity, i.c. temporal changes in phenological processes. Leaves of both oak and beech develop faster when spring temperature is higher. However, there are large annual variations that can be linked to spring temperature. Leaf development of oak starts mid-april. During the experiment this almost always occurred in the same period. In 2007 (warm spring) they flushed ten days earlier; in years with colder spring, such as 2006 and 2013, flushing started by the end of April to the beginning of May.

The results for beech are quite similar, but leaf development is much faster. Beech also flushed earlier in 2007 and later in 2013, but the differences are smaller compared to oak.

Further warming will cause an ever earlier start of the growing season. This will extend the growing season, possibly causing trees to grow harder. At first sight, this seems positive, but it is still unclear what the consequences are for tree vitality. The current growth rate is matched by many organisms. Changing tree phenology can contribute to the presence or absence of insects, pests or diseases.

Trend: start leaf flushing oak: no significant decrease
 full development leaf oak: no significant increase
 start leaf flushing beech: no significant decrease
 full development leaf beech: no significant decrease



Peak pollen production by birch and several grasses

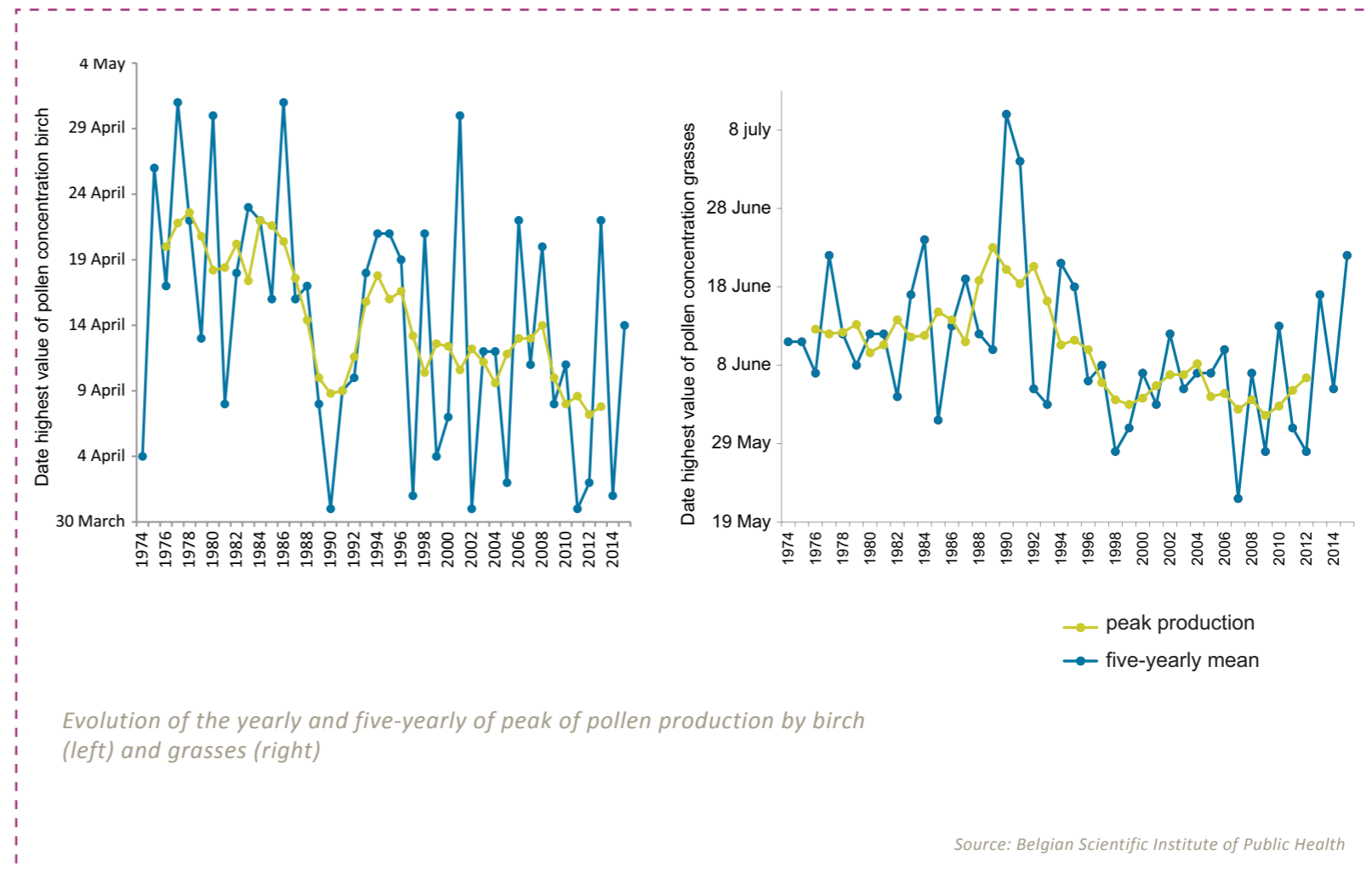
European
Biodiversity Strategy
2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

This indicator shows the evolution of the peak of pollen production by birch and several grasses.

Since 1974 the concentration of pollen in the air from birch and several grasses is measured by the Belgian Scientific Institute of Public Health. When the date with the highest value of pollen concentration (= peak pollen production) is set over the time, it turns out that the peak shows big yearly fluctuations. **The trend of the five-yearly mean of birch shows a clear advancing in time over the years.** For this tree species the peak appeared around April 21 for the period 1975-1985, but for the period 1995-2015 the peak occurs one week earlier. For the last ten years the peak has remained the same. **The trend of the five-yearly mean of several grasses also shows a clear advancing over the years.** The peak appears in the period 1975-1985 around June 8, while for the period 1995-2015 the peak has been occurring one week earlier.



Trend: significant decrease (birch and grasses)

Alien species

European Biodiversity Strategy 2020

Target 5

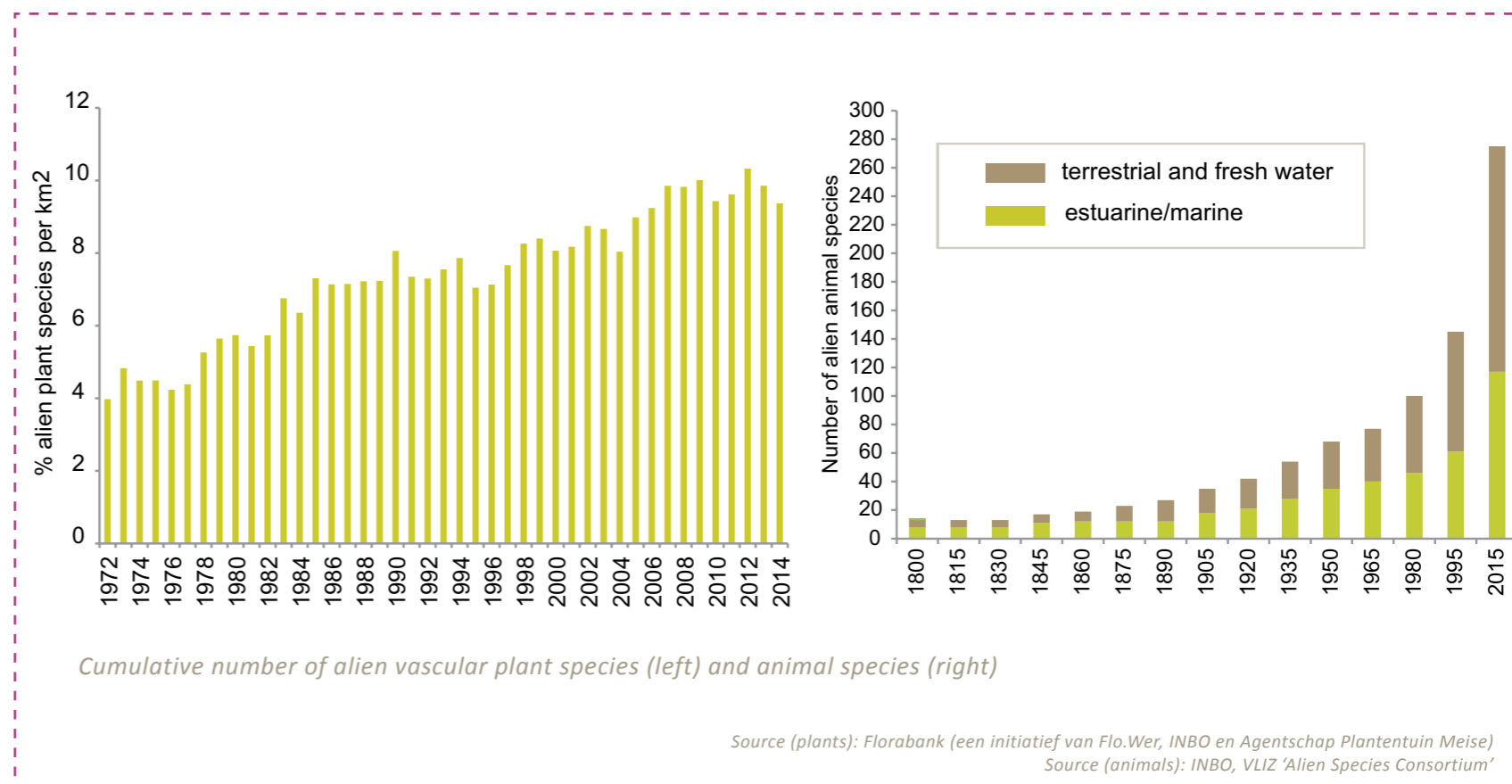
By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS. (SEBI 10)

This indicator shows the cumulative number of alien plant and animal species.

With the increasing mobility of humans and goods more and more plant and animal species are – deliberately or otherwise – imported and exported. Imported alien species can become invasive in nature and pose an increasing threat to the indigenous biodiversity. The rising number of alien species increases the risk of problematic invasive species.

The proportion of alien plant species has doubled since the 1970s from 5% to almost 10%. Alien plants are continuously introduced unintentionally (e.g. hitchhikers in potted plants) or intentionally (e.g. gardens and horticulture). Only part of these introduced species establish permanent populations and only some of these subsequently spread in the environment. Between 1800 and 2015 at least 275 alien animal species have established permanent populations in Flanders. About 158 of them have established populations in terrestrial and freshwater ecosystems. Since 1950, the number of alien animal species increases exponentially. **During the last years, the number of alien plant and animal species has increased drastically in Flanders. This increases the risk of invasive alien species. The cost of controlling invasives (e.g. black cherry, Canada goose, floating pennywort) is already high.** The new EU Regulation No 1143/2014 on the prevention and management of the introduction and spread of invasive alien species now provides a juridical basis for the rapid eradication and control of such species. Also, it will urge to set up action plans for priority pathways of invasive species.

Trend: significant increase (plants)
no correct trend determination possible (animals)



Number of listed 'worst' invasive alien species threatening biodiversity

European Biodiversity Strategy 2020

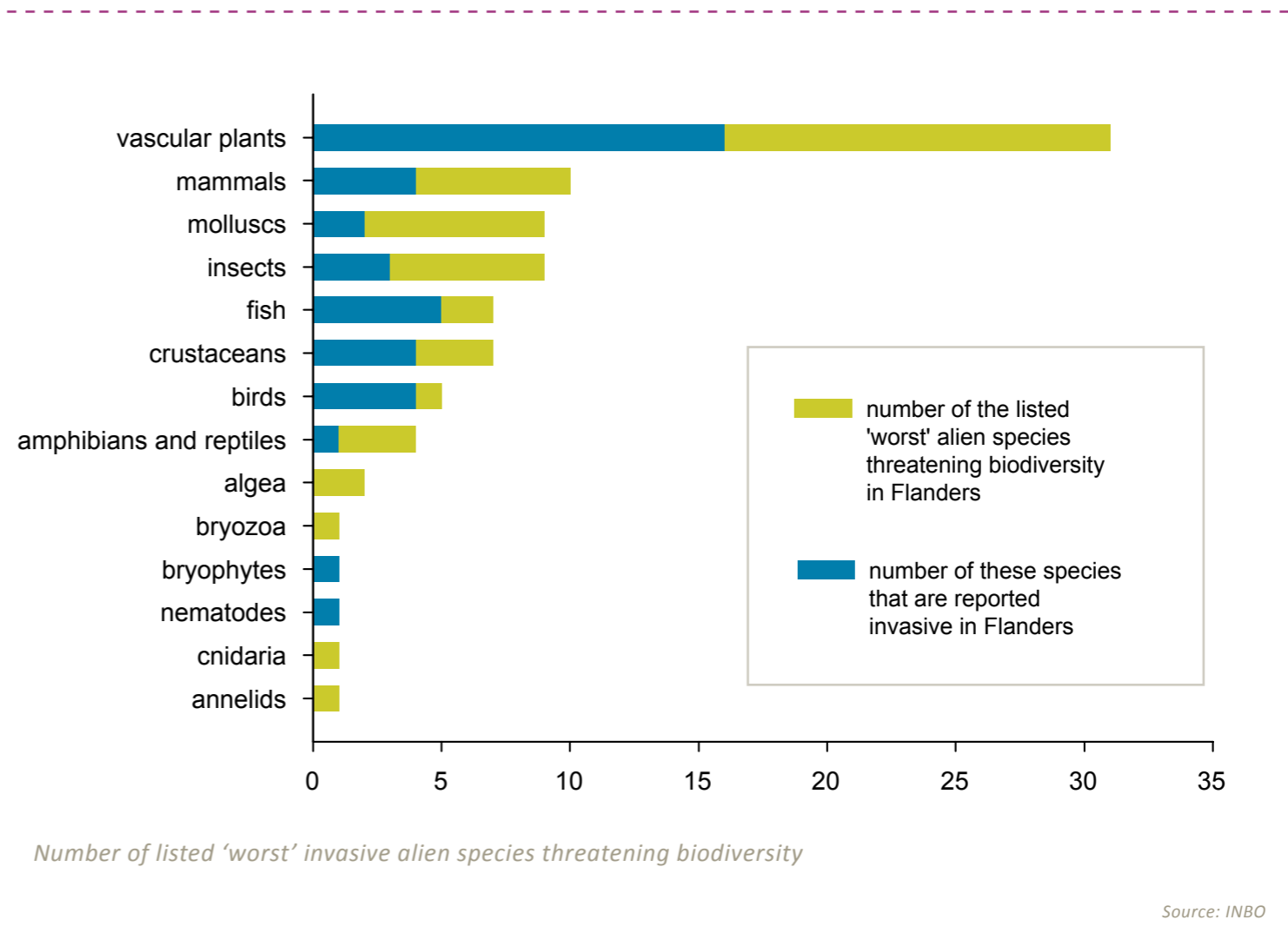
Target 5

By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

Alien invasive species (IAS) are considered a major threat to biodiversity worldwide. The Convention on Biological Diversity wants to identify and prioritize invasive alien species and their introduction pathways and wants to control priority species by 2020. The indicator shows the presence of alien species that are threatening biodiversity in Flanders and the proportion that behaves invasive in nature.

The selection of 'worst' invasive alien species is based on international lists of problematic species such as the global IUCN worst list and lists from regional research networks such as NOBANIS and DAISIE. Species on the list can severely impact on ecosystem structure and function, replace native species or impose a threat to unique biodiversity. In addition, they may have negative consequences for human activities, health and/or economic interests.

In Flanders, at least 89 of such potentially harmful IAS occur. At least 41 of them also really behave invasive in nature. Most of them are plants (16 species), fish (five species), mammals (four species), crustaceans (four species) and birds (four species).



Trend: no correct trend determination possible

Number of wintering ruddy duck in Flanders

European Biodiversity Strategy 2020

By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

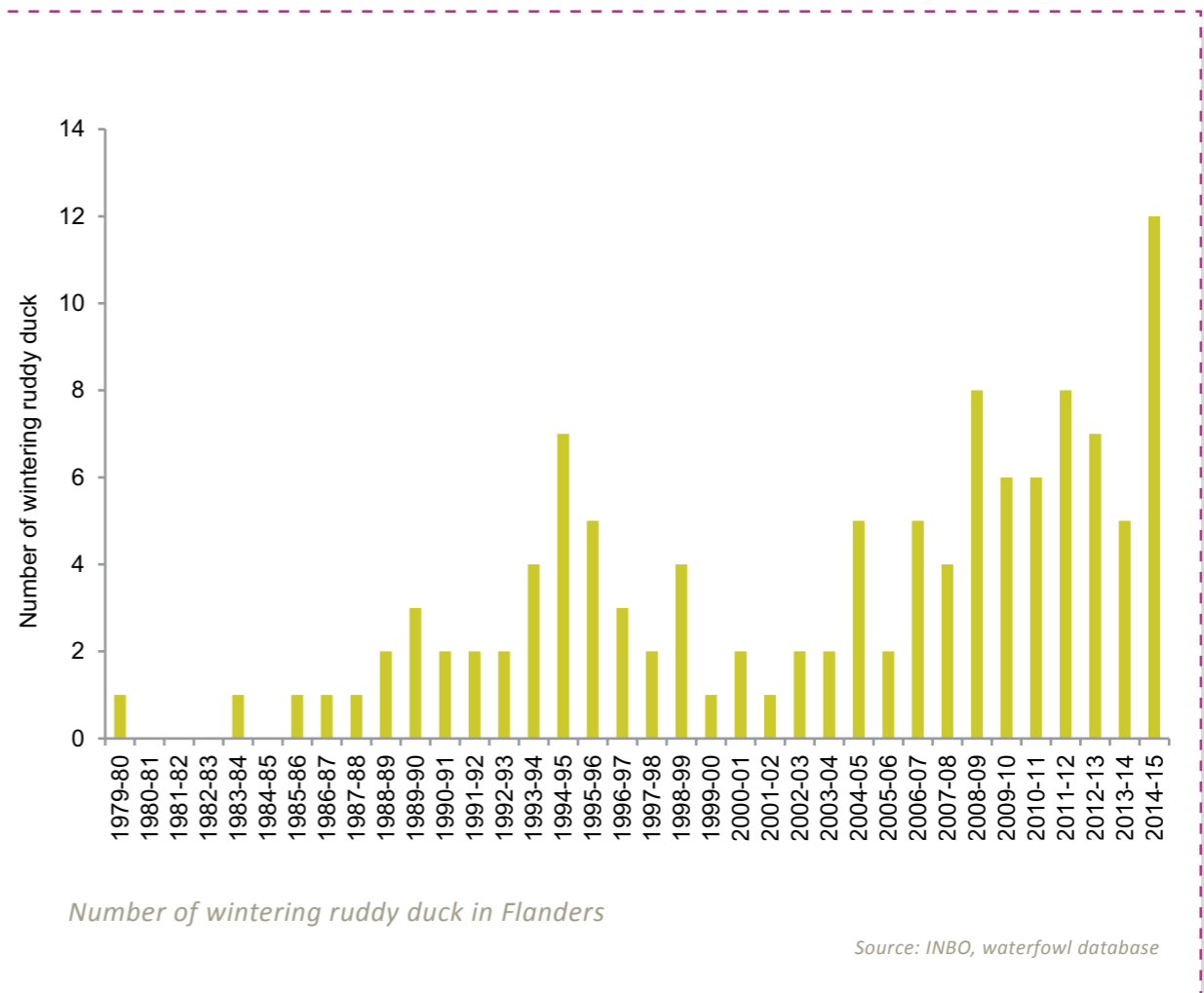
Target 5

The indicator shows the number of wintering birds since 1979 based on the standardised waterbirds census (October-March). The ruddy duck *Oxyura jamaicensis* has become established in the wild in Flanders in small numbers following escapes from wildfowl collections and repeated input from neighbouring countries. Ruddy ducks are considered the greatest long-term threat to the white-headed duck *O. leucocephala* (Munoz-Fuentes *et al.* 2006, 2007; Rhymer & Simberloff, 1996; Kumschick & Nentwig, 2010). The obligation to eradicate alien ruddy Ducks is recognised by many international conservation conventions and agreements (Birds Directive, AEW, Bern Convention - Recommendation No. 149 (2010), Wildlife Trade Regulation 338/97, EU Regulation No 1143/2014). An action plan for eradication from the Western Palearctic was prepared in 1999 and revised (2011-2015).

Ruddy Ducks should be eradicated by 2015, in line with the International Single Species Action Plan for the White-headed Duck. Interim target is an annual reduction by at least 50% of national wintering populations.

Currently, there are an estimated 10-15 individuals present in Flanders. The first breeding attempts in Flanders were tackled by local managers. Since 2012, the Flemish Government set up an early warning system and a coordinated rapid response mechanism in cooperation with ngo's. Although the reaction time in Flanders is sometimes long when birds are reported, as a consequence of actions undertaken in neighbouring countries (UK, France, The Netherlands), the expectation is the number of ruddy ducks will decrease the following years.

Since 2009, 35 adults and 18 juvenile birds were culled in Flanders.



Trend: period 1993-2002 to 1995-2004: significant decreasing trend
 period 1997-2006 to 2003-2013: significant increasing trend

Defragmentation along road infrastructure in Flanders

European
Biodiversity Strategy
2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

Landscape fragmentation as a result of road infrastructure is very high in Flanders. This results in many problems for the conservation of wildlife and nature areas.

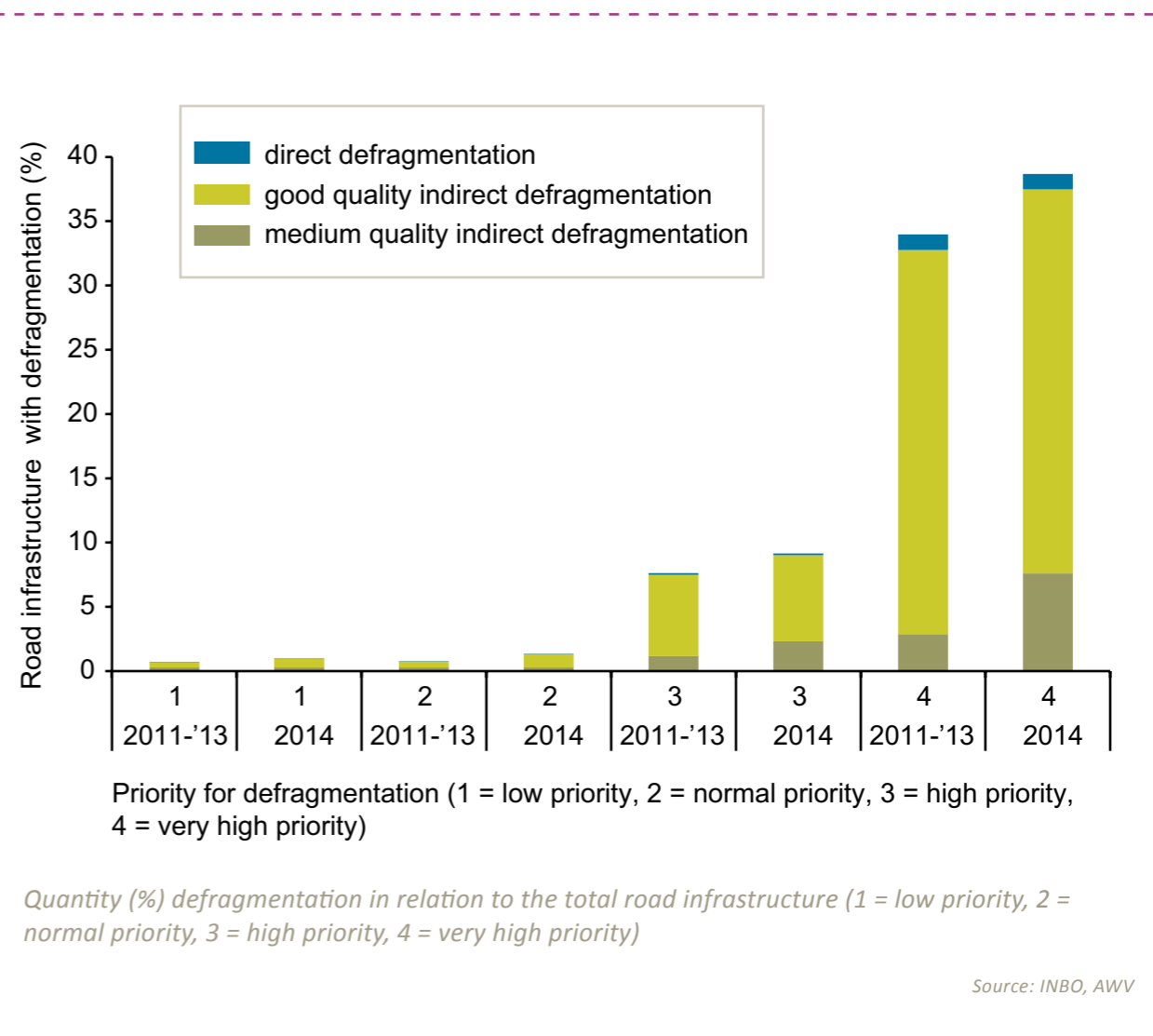
The road infrastructure defragmentation indicator shows the quantity and quality of current defragmentation measures along highways, large and secondary roads, railways and canals in relation to an earlier established priority atlas for defragmentation.

We used criteria that display a global quality: direct defragmentation (= area of the fauna passage itself) and medium or good quality indirect defragmentation (track with eco-grids around the passages). Therefore, the indicator can also result in recommendations for a qualitative improvement in the current defragmented parts.

The indicator shows defragmentation in Flanders is limited. Currently, about 4.5% of 1.200 km 'low to very high' priority road infrastructure, has medium or good quality defragmentation for a certain species group. This is about 39% for 'very high priority' road infrastructure, 9% for 'high priority', and 1% for both 'normal priority' and 'lower priority' road infrastructure.

In relation to 2011 (Everaert & Peymen, 2011) and the almost unchanged situation in 2012 and 2013, a small increase can be seen in 2014. This is mainly because of the new 'ecoduct Kempengrens' (with eco-grids) and additional eco-grids along existing fauna passages (i.e. E19 highway).

Trend: no correct trend determination possible



Area with implemented ecological restoration projects

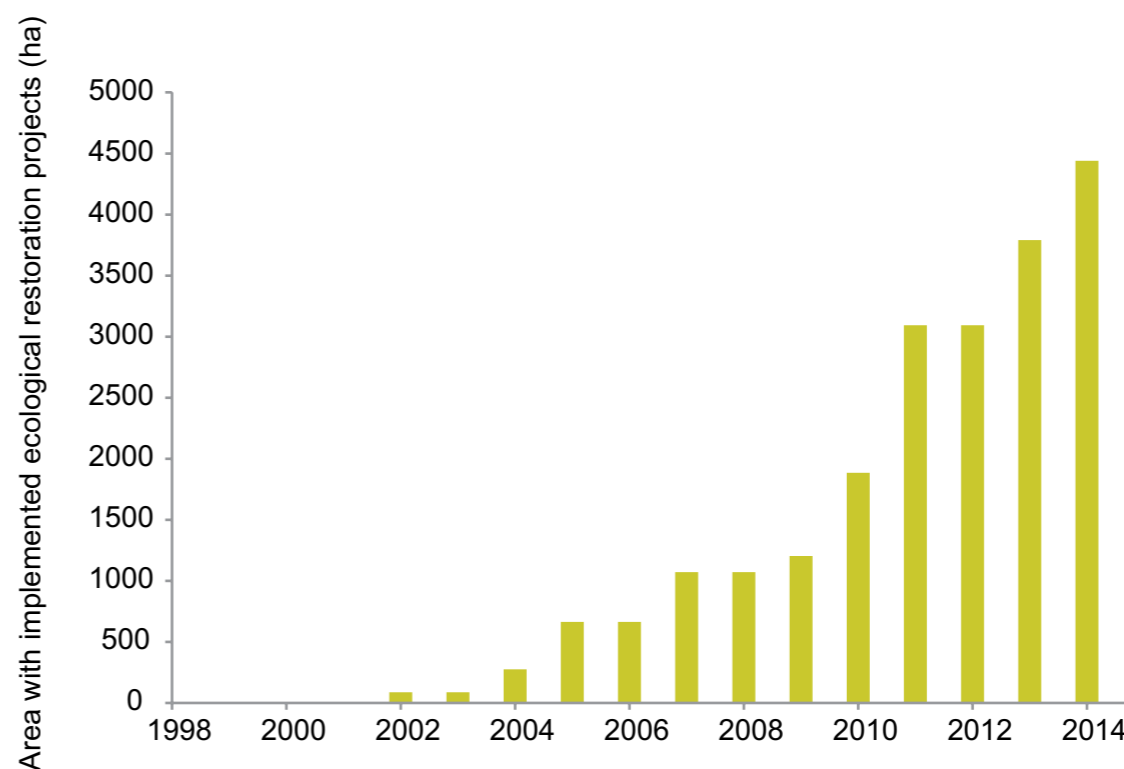
European
Biodiversity Strategy
2020

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Target 2

This indicator shows the evolution of the total area with implemented ecological restoration projects. Since 1998, the instrument 'ecological restoration' is used by the Agency for Nature and Forest (ANB) and the Flemish Land Agency (VLM) to restore areas in function of nature. Ecological restoration aims at creating better conditions for the development of nature in designated areas through active intervention.

Ecological restoration projects are carried out in phases: feasibility study, establishment of the project, identifying measures and modalities, approval of implementation plan and execution. **At the end of 2014, 15 projects were implemented and 11 running. The other nine are all in progress. The total realized area increased to 4.441 ha in 2014.** If all projects will be carried out, this area will increase to over 13.000 ha in the next years.



Evolution area with implemented ecological restoration projects

Source: VLM

Trend: significant increase

Forest area with management plan according to the criteria for sustainable forest

European Biodiversity Strategy 2020

Target 3

By 2020, forest management plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size (to be defined by the Member States or regions and communicated in their rural development programmes) that receive funding under the EU rural development policy so as to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 baseline.

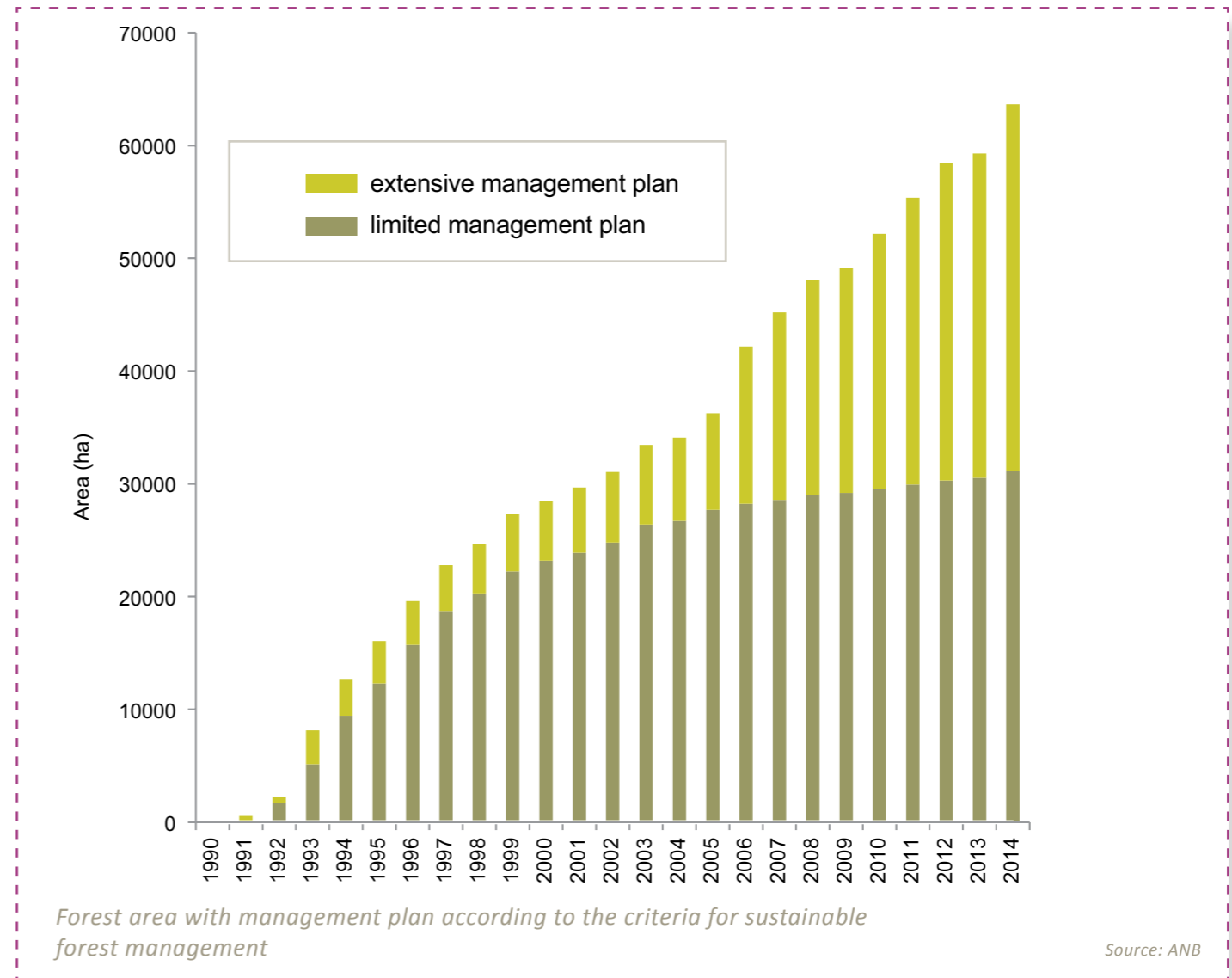
This indicator shows the evolution of forest area with a management plan according to the criteria for sustainable forest management.

A forest management plan is important in order to achieve sustainable forestry. The Flemish Forest Decree allows two types of management plan: limited and extensive. Limited management plans need to comply with only minimum standards, while extensive management plans need to comply with the criteria for sustainable forest management. These approximately follow the guidelines of the Forest Stewardship Council (FSC). This certificate can then be easily obtained.

Forest management plans are compulsory for all forests larger than five ha. Private owners are offered the choice between limited and extensive management plans, whereas extensive management plans are compulsory for public forests. They are also compulsory for private forests located within certain nature oriented land use planning areas. The other private owners are encouraged to develop extensive management plans by means of grants and by cooperating in forest owner groups.

Between 1990 and 2014, 63.662 ha of forest management plans were approved (32.483 ha extensive and 31.179 ha limited).

Trend: extensive management plan: significant increase
 limited management plan: significant trend, top reached



Area with agri-environmental measures

European Biodiversity Strategy 2020

Target 3

By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 baseline, thus contributing to enhance sustainable management.

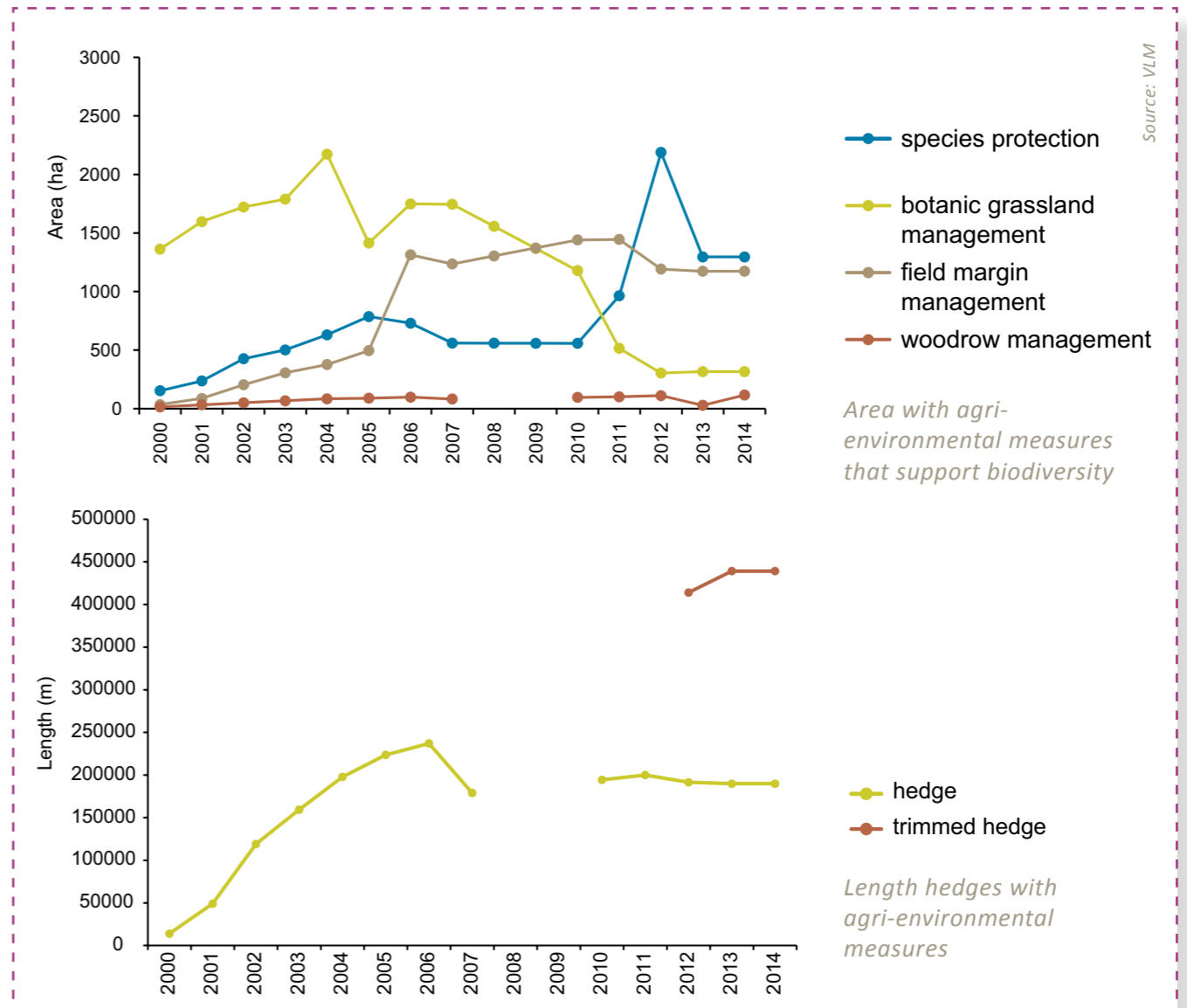
The indicator shows changes in the area with agri-environmental measures implementation.

The Flemish programme for rural development (PDPO, 2000-2006; 2007-2013) offered the opportunity to farmers to commit themselves, for a minimum period of at least five years, to adopt environmentally-friendly farming techniques that go beyond legal obligations concerning environment, nature and landscape.

The agri-environment schemes concerning field edges and the restoration, development and conservation of small and linear landscape components aim to consolidate the natural infrastructure of the agricultural landscape. **In the first period (2000–2006) measures concerning small and linear landscape elements were successful. In the second period, the amount of both types of agri-environment schemes concerning the natural infrastructure stagnated.** In 2012, new measures for planting and conservation management of hedges were very successful: 112 km of new hedges were established, and agreements for the management of 300 km hedges were granted. **Agri-environment schemes for botanical management were not successful and the amount stagnated in the second period.**

Recently, a series of newly developed environmental schemes was presented for the period 2014-2020, for example for pollarding tree rows and survival enhancement of breeding grassland bird chicks. **2014 was a transitional year in which only current agreements were continued, which may explain the stagnation of a number of indicators.** Since 2015 the agreement for planting linear landscape elements was skipped; only conservation management of these elements is still granted. The demarcation of priority zones for all current agri-environmental schemes aims to increase the effectiveness of these measures (Van Uytvanck *et al.* 2014 & 2015).

Trend: species protection: significant increase
 botanical grassland management: significant trend, decrease is getting stronger
 field margin management: significant trend, top reached, decrease started
 woodrow management: significant trend, decrease is getting stronger
 hedge: significant trend, decrease is getting stronger



Frequency of visits to forests and natural areas

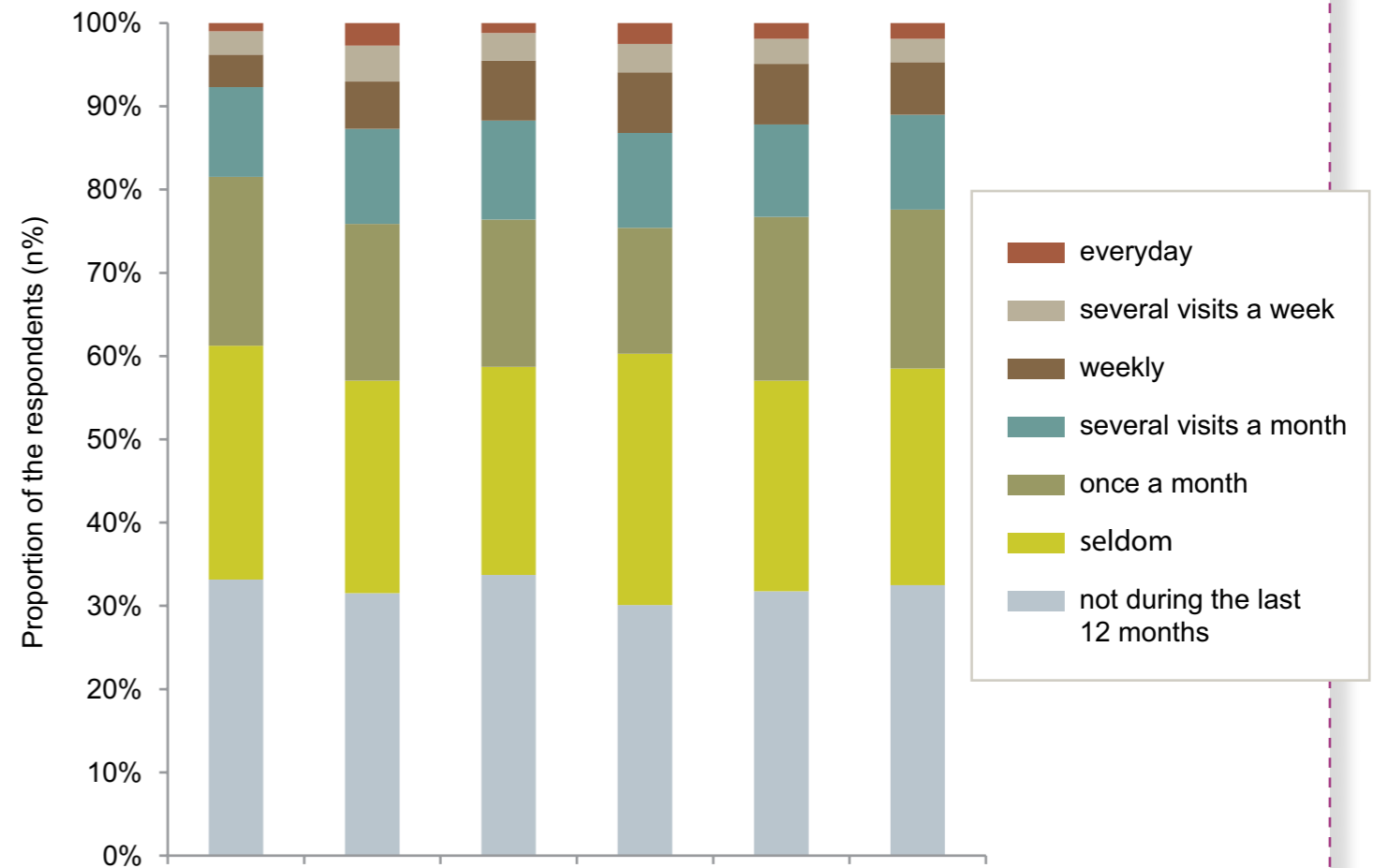
European Biodiversity Strategy 2020

Target 1

To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

This indicator shows the evolution of the frequency of visits to forests and natural areas. Flemish Nature policy considers access to nature and forest areas as a stimulating measure to increase public support for nature and forest. The Flemish Government Agreement pleads for an increased public accessibility of nature and forest areas. The annual survey of the Flemish Government monitors public visits in forest and natural areas (Beyst & Pickery, 2006).

Approximately 11% of the population visited at least weekly a forest or nature reserve in 2014. More than 32% people did not pay a visit to a forest or nature reserve during the past 12 months and 26% did this only once a year. In the period 2010- 2014 there are more visits than in 2009. However, the number of people visiting a forest or nature area once a week decreased slightly (1%). The percentage of people who never or only once a year pay a visit to a forest or nature area increased slightly (about 1.5%).



Frequency of visits to forests and natural areas

Source: Studiedienst van de Vlaamse Regering

Trend: no correct trend determination possible

Membership of NGO's for nature

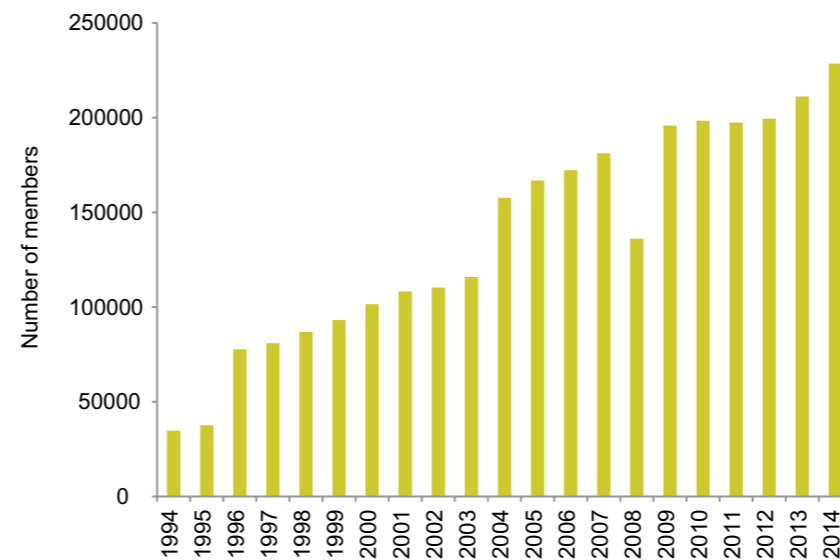
European Biodiversity Strategy 2020

Target 1

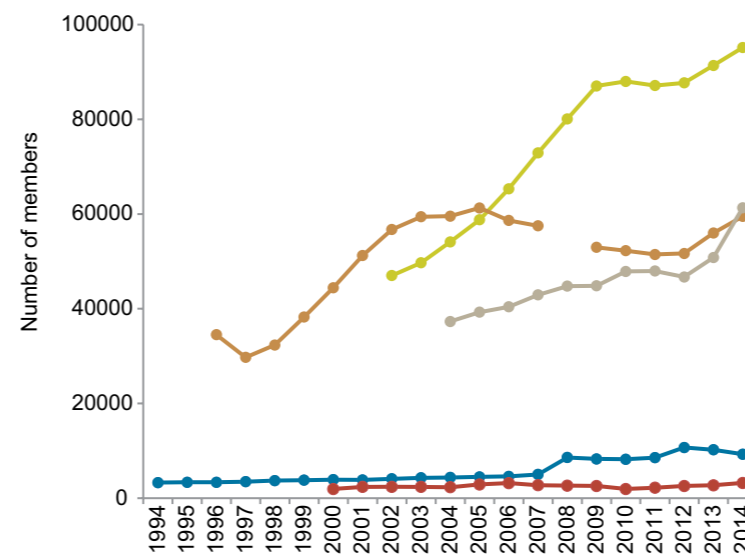
To halt the deterioration in the status of all species & habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status and more 50% more species assessments under the Birds Directive show a secure or improved status.

This indicator shows the evolution of the number of members of nature organizations active in Flanders. Statistical analysis of the data shows a significant increase of the total number from 1994 to 2014. This can be interpreted as an expression of support for nature within our society.

Since the beginning of the census in 1994, the number of memberships of nature organizations in Flanders has increased almost every year. 2014 showed a growth by 17.000 memberships. **By the end of 2014, nature organizations in Flanders have 228.000 members in total.** Except for Vogelbescherming Vlaanderen, memberships increased in each organization. Natuurpunt is the largest nature organization in Flanders with 95.163 members. WWF is the second largest with 61.315 members, followed by Greenpeace with 59.504 members, Vogelbescherming Vlaanderen with 9.275 members and JNM with 3.211 members.



Evolution membership of NGO's for nature conservation: total (above) en per nature organisation (under)



- Natuurpunt (non-governmental organisation managing nature reserves)
- Greenpeace
- WWF
- Bird protection organisation
- Youth organisation for Nature and Environment

Source: NGO's for nature conservation

Trend: significant increase (total)

References

- Adriaens T. (2014). Nieuwe EU verordening moet biodiversiteit beschermen tegen invasieve soorten. *Natuur.focus* 13: 90–91.
- Adriaens T., San Martin y Gomez G., Bogaert J., Crevecoeur L., Beuckx J.P., Lock K., Jonckheere K. & Maes D. (2014). Rode Lijst van de lieveheersbeestjes in Vlaanderen. Kansen voor een beter bescherming en een aangepast natuurbeheer. *Natuur.focus* 13: 118-128.
- Adriaens T., San Martin y Gomez G., Bogaert J., Crevecoeur L., Beuckx J.P. & Maes D. (2015). Testing the applicability of regional IUCN Red List criteria on ladybirds (Coleoptera, Coccinellidae) in Flanders (north Belgium): opportunities for conservation. *Insect Conservation and Diversity* (2015) doi: 10.1111/icad.12124.
- Anselin A., Devos K., Vermeersch G., Stienen E & T. Onkelinx (2013). Toelichting bij het opstellen van de rapportage in het kader van artikel 12 van de Vogelrichtlijn en status van vogelsoorten met instandhoudings-populatiedoelen en van typische vogelsoorten van Natura 2000 habitattypes. Instituut voor Natuur-en Bosonderzoek, INBO, INBO.2014.1567208.
- Ash N., Blanco H., Brown C., Vira B., Zurek, Garcia K. & Tomich T. (2010). *Ecosystems and Human Well-Being: A Manual for Assessment Practitioners*.
- Bern Convention. Draft Recommendation No. 149 (2010) adopted on 9 December 2010, on the eradication of the Ruddy Duck (*Oxyura jamaicensis*) in the Western Palearctic.
- Beyst V. & Pickery J. (2006). Bezoek aan natuur- en bosgebieden. Nota van de Studiedienst van de Vlaamse Regering. Studiedienst van de Vlaamse Regering, Brussel.
- Bonte D., Vandomme V., Muylaert J. & Bosmans R. (2001). Een gedocumenteerde Rode Lijst van de water- en oppervlaktewantsen van Vlaanderen. Onderzoeksopdracht K/IN99/JPM/01 - Universiteit Gent, Gent, 121 pp.
- Braat L. & P. ten Brink (eds.) (2010), *The Cost of Policy Inaction. The case of not meeting the 2010 biodiversity target. study for the European Commission, DG Environment under contract: ENV.G.1/ETU/2007/0044 (Official Journal reference: 2007 / S 95 – 116033)*. Wageningen / Brussels , May 2008.
- Bruers S. & Verbeeck B. (2010), *De berekening van de ecologische voetafdruk van Vlaanderen. Studie uitgevoerd in opdracht van de Vlaamse Milieumaatschappij, MIRA, MIRA/2010/01, Ecolife*.
- Bruers S. & Vandenberghe K. (2013), *Actualisatie van de Ecologische Voetafdruk van Vlaanderen. De jaren 2004 – 2009 volgens NFA editie 2010, studie uitgevoerd in opdracht van de Vlaamse Milieumaatschappij, MIRA, MIRA/2014/01, Ecolife*.
- Cox G.W. (2004). *Alien Species and Evolution: The Evolutionary Ecology of Exotic Plants, Animals, Microbes, and Interacting Native Species*. Island Press: Washington. 400 p.
- De Knijf G. & Anselin A. (2010). When south goes north: Mediterranean dragonflies (Odonata) conquer Flanders (North-Belgium). In: Ott J. (Ed) *Monitoring Climate Change With Dragonflies*. *BioRisk*, 5: 141-153.

- De Knijf G., Anselin A., Goffart P. & Tailly M. (eds.) (2006). De libellen (Odonata) van België: verspreiding - evolutie - habitats. Libellenwerkgroep Gomphus i.s.m. Instituut voor Natuur- en Bosonderzoek, Brussel. 368 pp.
- Demolder H., Schneiders A., Spanhove T., Maes D., Van Landuyt WK., & Adriaens T. (2014). Hoofdstuk 4. Toestand biodiversiteit. (INBO.R.2014.6194611). In Stevens, M. *et al.* (eds.), Natuurrapport - Toestand en trend van ecosystemen en ecosysteemdiensten in Vlaanderen. Technisch rapport. Mededelingen van het Instituut voor Natuur en Bosonderzoek, INBO.M.2014.1988582, Brussel.
- European Commission (2006). Communication from the Commission. Halting the loss of biodiversity by 2010 – and beyond. Sustaining ecosystem services for human well-being. COM (2006) 216 final. European Commission, Brussels.
- European Commission (2011). Communication from the Commission. Our life insurance, our natural capital: an EU biodiversity strategy to 2020 COM (2011) 244. European Commission, Brussels.
- European Environment Agency (2007). Streamlining European Biodiversity Indicators (SEBI): EEA technical report. European Environment Agency, Copenhagen.
- European Environment Agency (2010). Assessing biodiversity in Europe — the 2010 report EEA Report No 5/2010. European Environment Agency, Copenhagen.
- European Environment Agency (2012a). Streamlining European biodiversity indicators 2020: Building a future on lessons learnt from the SEBI 2010 process EEA Technical report No 11/2012. European Environment Agency, Copenhagen.
- European Environment Agency (2012b). Report of the working group on Interlinkages of the Streamlining European Biodiversity Indicators project (SEBI). EEA Technical report. European Environment Agency, Copenhagen.
- Everaert J. & Peymen J. (2011). Indicator inzake ontsnippering van transportwegen in Vlaanderen. Rapport van het Instituut voor Natuur- en Bosonderzoek 2011 (INBO.R.2011.59). Instituut voor Natuur- en Bosonderzoek, Brussel.
- Jacobs S., Spanhove T. & Panis P. (2014). Hoofdstuk 5 - Toestand en trend van ecosysteemdiensten in Vlaanderen (INBO.R.2014.6160407). In Stevens, M. *et al.* (eds.), Natuurrapport - Toestand en trend van ecosystemen en ecosysteemdiensten in Vlaanderen. Technisch rapport. Mededelingen van het Instituut voor Natuur- en Bosonderzoek, INBO.M.2014.1988582, Brussel.
- Jansen I. (2015). Trendbepaling Natuurindicatoren 2015. Rapport van het Instituut voor Natuur- en Bosonderzoek 2013 (INBO.R.2015.10259948). Instituut voor Natuur- en Bosonderzoek, Brussel. 88pp.
- Jooris R., Engelen P., Speybroeck J., Lewylle I., Louette G., Bauwens D. & Maes D. (2012). De IUCN Rode Lijst van de amfibieën en reptielen in Vlaanderen. Rapporten van het Instituut voor Natuur- en Bosonderzoek 2012 (22). Instituut voor Natuur- en Bosonderzoek, Brussel. 19pp.
- Kumschick S. & Nentwig W. (2010). Some alien birds have as severe an impact as the most effectual alien mammals in Europe. *Biological Conservation* 143(11): 2757-2762.
- Layke C., Mapendembe A., Brown C., Walpole M. & Winn J. (2012) Indicators from the global and sub-global Millennium Ecosystem Assessments: An analysis and next steps. *Ecological indicators* 17(0):77-87.
- Lock K., Stoffelen E., Vercouteren T., Bosmans R. & Adriaens T. (2013). Updated Red List of the water bugs of Flanders

- (Belgium) (Hemiptera: Gerromorpha & Nepomorpha). Bulletin de la Société royale belge d'Entomologie/Bulletin van de Koninklijke Belgische Vereniging voor Entomologie, 149, 57–63.
- Louette G., Adriaens D., De Knijf G. & Paelinckx D. 2013. Staat van instandhouding (status en trends) habitattypen en soorten van de Habitatrichtlijn (rapportageperiode 2007-2012). INBO.R.2013.23, Brussel, 43 pp.
- Maes D., Vanreusel W., Jacobs I., Berwaerts K. & Van Dyck H. (2012). Applying IUCN Red List criteria at a small regional level: A test case with butterflies in Flanders (north Belgium). *Biological Conservation*, 145, 258-266.
- Maes D., Baert K., Boers K., Casaer J., Criel D., Crevecoeur L., Dekeukeleire D., Gouwy J., Gyselings R., Haelters J., Herman D., Herremans M., Huysentruyt F., Lefebvre J., Lefevre A., Onkelinx T., Stuyck J., Thomaes A., Van Den Berge K., Vandendriessche B., Verbeylen G. & Vercayie D. (2014). Instituut voor Natuur- en Bosonderzoek, Brussel. De IUCN Rode Lijst van de zoogdieren in Vlaanderen. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO.R.2014.1828211). Instituut voor Natuur- en Bosonderzoek, Brussel.
- Munoz-Fuentes V., Green A.J., Sorenson M.D., Negro J.J., & Vila C. (2006). The ruddy duck *Oxyura jamaicensis* in Europe: natural colonization or human introduction? *Molecular Ecology* 15(6): 1441-1453.
- Munoz-Fuentes V., Vila C., Green A.J., Negro J.J., & Sorenson M.D. (2007). Hybridization between white headed ducks and introduced ruddy ducks in Spain. *Molecular Ecology* 16(3): 629-638.
- Onkelinx T. & Vermeersch G. (2014). Jaarlijkse analyse van de Algemene Broedvogelmonitoring (ABV). Rapporten van het Instituut voor Natuur- en Bosonderzoek 2014 (10 oktober 2014). Instituut voor Natuur- en Bosonderzoek, Brussel.
- Pires S.M.M. (2011) Sustainability Indicators and Local Governance in Portugal. Universidade de Aveiro.
- Pimental D., McNair S., Janecka J., Wightman J., Simmonds C., O'Connell C., Wong E., Russel L., Zern J., Aquino T. (2002). Economic and environmental threats of alien plant, animal, and microbe invasions. *Biological Invasions* 307–329.
- Rhymer J.M. & Simberloff D. (1996). Extinction by hybridization and introgression. *Annual Review of Ecology and Systematics* 27: 83-109.
- Simoens I., Thoonen M., Meiresonne L. & Van Daele T. (2014). Hoofdstuk 26 – Ecosysteemdienst groene ruimte voor buitenactiviteiten. (INBO.R.2014.1987887). In Stevens, M. *et al.* (eds.), Natuurrapport - Toestand en trend van ecosystemen en ecosysteemdiensten in Vlaanderen. Technisch rapport. Mededelingen van het Instituut voor Natuur- en Bosonderzoek, INBO.M.2014.1988582, Brussel.
- Stevens, M., Demolder, H., Jacobs, S., Michels, H., Schneiders, A., Simoens, I., Spanhove, T., Van Gossum, P., Van Reeth, W., Peymen, J. (Eds.) (2015). Flanders Regional Ecosystem Assessment: State and trends of ecosystems and their services in Flanders. Synthesis. Communications of the Research Institute for Nature and Forest, INBO.M.2015.7842756, Brussels.
- Van der Linden S., Van Camp N. & Van Valckenborgh J. (2013). Opmaak van een digitale bos-, natuur- en groenkartering voor Vlaanderen op basis van digitale luchtopnames 2013 (versie 1.0). Rapport Agentschap voor Geografische Informatie Vlaanderen (AGIV), Gent.
- Van Dyck H., Puls R., Bonte D., Gotthard K. & Maes D. 2015. The lost generation hypothesis: could climate change drive ectotherms into a developmental trap? *Oikos* 124: 54-61.

- Van Landuyt W., Vanhecke L. & Brosens D. (2012). Florabank1 : a grid-based database on vascular plant distribution in the northern part of Belgium (Flanders and the Brussels Capital region). *PhytoKeys* 12: 59–67.
- van Swaay C.A.M., van Strien A.J., Aghababayan K., Åström S., Botham M., Brereton T., Chambers P., Collins S., Domènech Ferrés M., Escobés R., Fernández-García J.-M., Fontaine B., Goloshchapova S., Gracianteparaluceta A., Harpke A., Heliölä J., Khanamirian G., Julliard R., Kühn E., Lang A., Leopold P., Loos J., Maes D., Mestdagh X., Monasterio Y., Munguira M.L., Murray T., Musche M., Ōunap E., Pettersson L., Popoff S., Prokotev S., Roth T., Roy D.B., Settele J., Stefanescu C., Švitra G., Marques Teixeira S., Tiitsaar A., Verovnik R. & Warren M.S. 2015. The European butterfly Indicator for Grassland species: 1990-2013, Rapport VS2015.009. De Vlinderstichting, Wageningen.
- Van Uytvanck J., Esprit M., Van Landuyt W., De Blust G. & Michiel K. 2014. Afbakening van kansrijke gebieden voor Beheerovereenkomsten Botanisch Beheer - pakket 'ontwikkeling soortenrijk grasland' in Vlaanderen. Rapporten van het Instituut voor Natuur- en Bosonderzoek. INBO.R.2014.3314966, Brussel, 28 pp.
- Van Uytvanck J., Esprit M., & De Blust G. 2015. Afbakening van prioritaire gebieden voor het sluiten van natuurgerichte beheerovereenkomsten. Rapporten van het Instituut voor Natuur- en Bosonderzoek. INBO.R.2015.7872503, Brussel, 23 pp.
- Verreycken H., Van Thuyne G., Belpaire C., Breine J., Buysse D., Coeck J., Mouton A., Stevens M., Van den Neucker T., De Bruyn L. & Maes D. (2012). De IUCN Rode Lijst van de zoetwatervissen in Vlaanderen. Rapporten van het Instituut voor Natuur- en Bosonderzoek 2012, INBO.R.2012.23. 17pp.
- Verreycken H., Belpaire C., Van Thuyne G., Breine J., Buysse D., Coeck J., Mouton A., Stevens M., Van den Neucker T., De Bruyn L. & Maes D. (2013). An IUCN Red List of freshwater fishes and lampreys in Flanders (north Belgium). *Fisheries Management and Ecology*.
- Vié J.C., Hilton-Taylor C. & Stuart S.N. (Eds.) (2009). *Wildlife in a changing world: an analysis of the 2008 IUCN Red List of threatened species*. World Conservation Union: Gland, Zwitserland. 180 p.
- Flemish Government (2011). Milieubeleidsplan 2011- 2015, vastgesteld door de Vlaamse Regering op 27 mei 2011. Ministerie van de Vlaamse Gemeenschap.
- Studiedienst van de Vlaamse Regering. VRIND. Vlaamse regionale indicatoren, 2012.

Abbreviations

ANB	Agency for Nature and Forest
AWV	Administratie Wegen en Verkeer
EEA	European Environment Agency
INBO	Research Institute for Nature and Forest
SEBI	Streamlining European 2010 Biodiversity Indicators
VLIZ	Flanders Marine Institute
VLM	Flemish Land Agency
VMM	Flemish Environment Agency
VRIND	Vlaamse Regionale Indicatoren