

Scotland's Natural Capital Asset Index

2020 Summary

Key messages

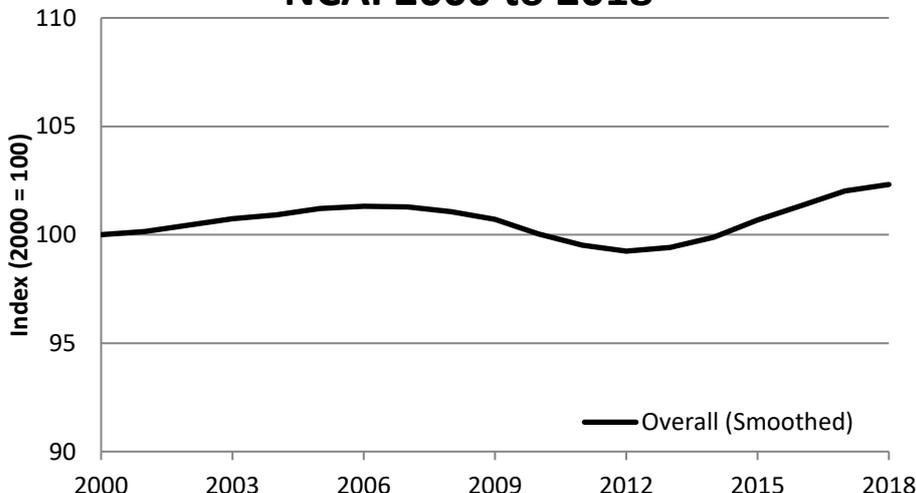
1. Natural capital is classed as being 'maintained' with results showing a mixture of increases, decreases and 'no change' amongst the habitats and ecosystem service categories.
2. Condition of heathland, and peat, mire and fen habitats have all improved.
3. Despite recent improving trends, the potential of Scotland's habitats to contribute to wellbeing remains a long way below historic highs.



Results

The potential of Scotland's habitats to deliver ecosystem services has improved over the past 18 years and is now at its highest level since 2000, recovering from a recent low in 2012. Despite consistent modest improvements, the NCAI is officially classed as 'maintaining' by the National Performance Framework where it is an economic indicator of sustainable development. This follows a deterioration in Scotland's natural capital between the 1950s and 1990s with many habitats declining during this period, especially bogs and grassland.

NCAI 2000 to 2018



2018 represented mixed fortunes for Scotland's nature. Whilst long term trends demonstrate a steadily improving picture some of the underlying habitat data suggest that ecosystems remain under strain. The absolute value of the Index showed a decline in 2018 (0.4%), erasing some of the gains seen in 2017 but still remaining higher than in 2016. Historical positive trends mean the overall smoothed trend of the NCAI is still positive and increased by 0.3%.

The condition of woodland Sites of Special Scientific Interest continues to decline which may illustrate wider declines in the countryside that current woodland indicators in the Index are unable to pick up.

What is the Natural Capital Asset Index?

Natural capital is the environmental resources (e.g. plants, animals, air, water, soils) that combine to yield a flow of benefits to people. Natural capital has historically been eroded by human activity, partly because it has not been properly valued when compared with other types of capital.

The capacity of ecosystems to provide benefits fluctuates over time due to changes in habitat quantity and quality. **Habitat quantity** is tracked using what we know about land cover change in Scotland. **Habitat quality** is tracked using 38 separate indicators which rely on datasets gathered by a range of public organisations and citizen science schemes.

The NCAI does not demonstrate changes in biodiversity nor a habitat's resilience to outside pressures although it does acknowledge **the importance of biodiversity for healthy and resilient ecosystems** and the future delivery of benefits. Some of these shortcomings can be assessed using the [ecosystem health indicators](#).

Results (continued)

Increases in woodland habitat extent and improvements in woodland bird numbers are driving the recent positive trends in woodland habitat's ability to contribute to human wellbeing.

A reduction in land designated 'arable land and market gardens' appears to be driving the reduction of potential to provide wellbeing from this habitat class; understanding what habitat class this is being converted to may help decision making in the future.

Montane habitats had a notable improvement of 3% in 2018.

The cultural benefits from nature show some increases with the percentage of the population making outdoor visits at least once a week rising significantly in 2018 from 52 to 59%

Natural capital, biodiversity, and the climate crisis

2018 was notable for two extreme weather events: firstly the 'beast from the east' typified by cold weather and intense snowfall, and secondly the long dry and hot spell of the early summer. However, in most cases extreme weather events put pressure on habitats and impact their ability to provide essential services.

In 2019, Scottish Government declared a global climate emergency and committed to a net-zero society by 2045. If climate change is allowed to continue unchecked extreme weather events will continue to increase in impact and frequency, affecting the natural resilience of these habitats and their ability to provide benefits in the future.

In the same year, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) global assessment, reported on the main drivers of biodiversity loss and the continuing deterioration of nature worldwide. Scotland's natural capital is supported by biodiversity: its function, resilience and ability to provide benefits now and into the future are fundamentally reliant on the diversity of life – genes, species and ecosystems. The NCAI does account for biodiversity through various bird and butterfly indicators, but more work is required to integrate biodiversity more fully into the Index.

Investment in natural capital through nature based solutions will reduce the driving force of climate change (through carbon sequestration) but will also increase a wide range of other ecosystem services whilst simultaneously creating opportunities for biodiversity.

Methodology

The NCAI uses ecosystem services to assess how nature contributes to the wellbeing of Scottish citizens.

Ecosystem services are the range of benefits people can derive from the natural environment. These services are often grouped into three distinct categories:

- *provisioning*, for example of water and food;
- *regulating*, for example of climate or disease; and
- *cultural* contributions which include aesthetics and recreation.

The following Scottish habitats are included in the NCAI:

- Woodland
- Inland surface waters
- Coastal
- Grasslands
- Mires, fens and bogs
- Heathland
- Agriculture and cultivated

Each habitat delivers a unique and varied blend of benefits, as demonstrated below

The index is set against a baseline year 2000 which is given the value 100.

The NCAI is a work in progress and efforts will continue to refine its methodology and data.

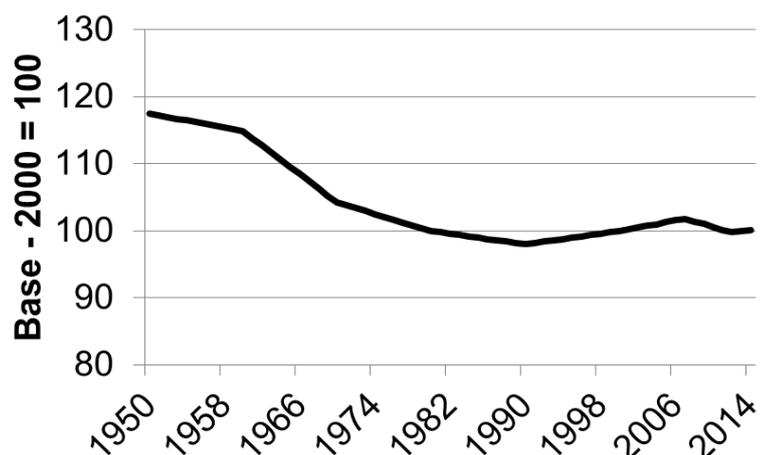
Historic trends of the NCAI

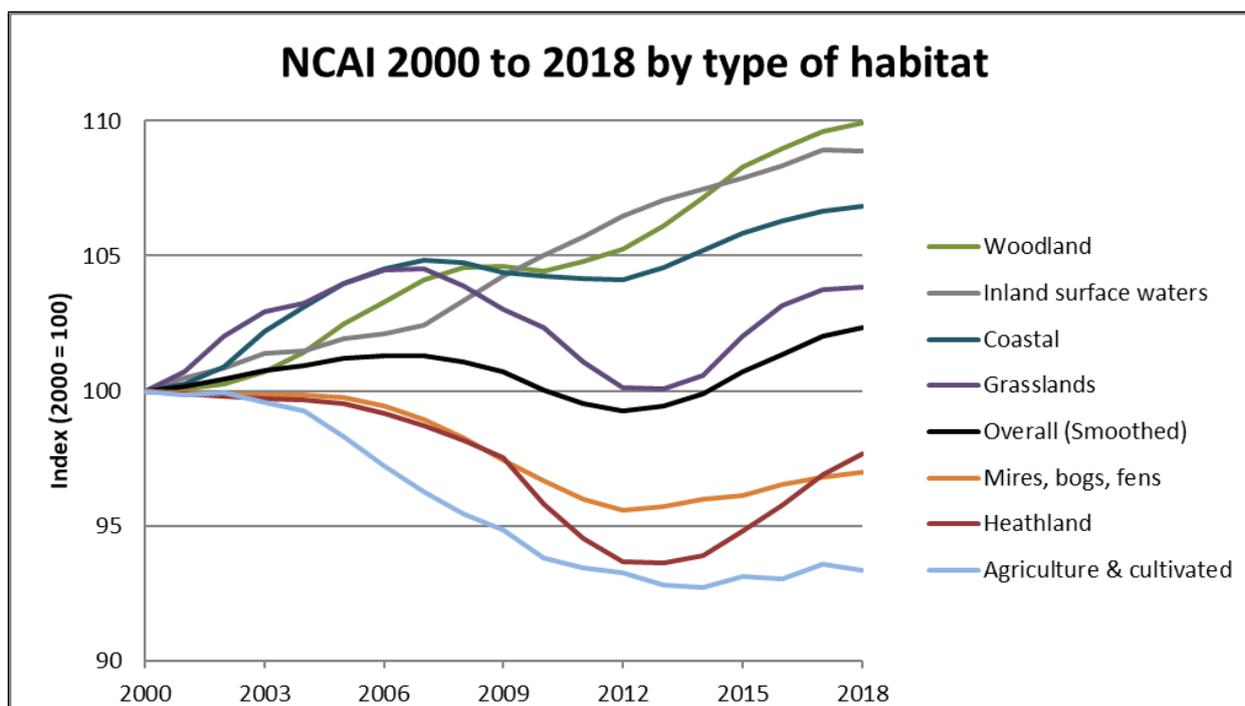
In 2014 we carried out a backcasting exercise to understand the longer term trends of natural capital in Scotland. An attempt was made to backdate the Index to 1950.

Unfortunately, this exercise wasn't able to use the same detail of habitat quality data that has been available since around the year 2000. However, using more coarse datasets we were able to demonstrate the longer term trends of natural capital in Scotland.

The trend suggests that natural capital has been in decline since 1950 and efforts to recover natural capital in Scotland still have some way to go to return to historic levels.

NCAI 1950 - 2015





Overall

A small rise founded in gains from previous years. Natural capital is now in a 'maintaining' state.

Woodlands

- Improvements being driven by habitat extent increase. Woodland birds are the best faring birds in Scotland.
- The impacts of grazing from deer and invasive non-native species are detrimentally impacting woodland quality and integrity.
- Woodland sites are in some of the poorest conditions across all habitat types in Scotland.

Inland surface waters

- Freshwater habitat's ability to contribute to wellbeing is unchanged from 2017.
- Levels of nitrates in Scottish waters increased while phosphate levels decreased.
- Wild salmon and grilse catches are down 44% since 2000, down by 25% in 2018 alone.

Coastal

- Coastal sites continue to improve and are in their best condition since the index began.

Mires, bogs, fens

- A modest increase of 0.2% in 2018 continues trend from 2012. But this is still much lower than historically.
- Mire, bog and fen site condition is driving the improvements.

Heathland

- Heathland habitats continue to improve, increasing year-on-year since 2010.
- Upland bird numbers are improving but are still much lower than in the recent past.

Agriculture & cultivated

- Agricultural habitats declined in 2018, despite many quality indicators for agricultural land improving.
- A reduction in land designated 'arable land and market gardens' appears to be driving the reduction of potential to provide wellbeing from this habitat class.
- Fertiliser and pesticide use continue to decrease, although pesticide use is still higher than 2000.

Grasslands

- Reduction in habitats classed as 'Mesic Grassland' has driven a decline in benefits derived from grassland.
- Grassland habitat quality has remained stable since last year's update.

About the Natural Capital Asset Index

The Natural Capital Asset Index (NCAI) helps us assess Scotland's prosperity: it tracks the capacity of Scotland's terrestrial ecosystems to provide the benefits that underpin our quality of life and that of future generations. Scotland's Economic Strategy recognises that investment in natural capital is "fundamental to a healthy and resilient economy."

The NCAI is a composite index which tracks changes in the capacity of Scotland's terrestrial ecosystems to provide benefits to people. The Index does not include the marine environment. It is not a monetary value but is composed in a way which reflects the relative contribution of habitats to the wellbeing, or quality of life, of those who live in Scotland.

Gaps still remain in our understanding; for example, our knowledge of upland habitats outside of protected areas is limited. The NCAI is a work in progress and efforts will continue to refine its methodology and data. We rely on indicators that are compiled by other organisations. The 2017 update (published in 2019) made minor adjustments to indicator 54: urban birds and indicator 48: change in woodland carbon. Several other indicators remain under review due to infrequent or discontinued updates.

Whilst the NCAI is an indicator of terrestrial habitats' contribution to wellbeing, it does not account for Scotland's considerable marine habitats, although a [feasibility study](#) for a marine version of the index was conducted in 2019.

Scotland's National Natural Capital Accounts

The Scottish Government and the UK Office for National Statistics have recently updated their experimental natural capital accounts for Scotland. These differ from the NCAI in many ways; a full explainer can be found [here](#).

Full results of this year's NCAI can be viewed in our [StoryMap](#).

More information about the NCAI, including trends for all terrestrial habitats and the detailed NCAI model is contained on our website. Further technical information on the NCAI and how it was formed can be found in the journal *Ecological Indicators* ([McKenna et al, 2019](#)).

Please get in touch if you would like further information.

Contact

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Indicators used

- Adult red grouse density*
- Agri-environment area
- Area of certified forest
- Area of grass cut for hay
- Bare fallow/set-aside area
- Butterflies - generalists
- Cereal yield
- Coastal bathing water quality (guideline and mandatory)*
- Coastal Site Condition (favourable condition)
- Farmland bird index
- Fertiliser use (inverse)
- Freshwater Site Condition (favourable condition)
- Grassland Site Condition (favourable condition)
- Greenspace - place for children to play*
- Greenspace - provides a space to relax*
- Greenspace - 'strongly agree' quality reduced in last five years (inverse)*
- Greenspace -attractive green areas *
- Mires/bogs/fens Site Condition (favourable condition)
- Montane Site Condition (favourable condition)
- Net annual change in carbon in woodlands
- Number of livestock units
- Outdoor visits per week (one or more)
- Pesticide use (inverse)
- Pollution: orthophosphate at safe level
- Raw water abstractions (inverse)
- Raw water quality: nitrates in rivers at safe level
- River water quality (% unpolluted sites)*
- Temperate shrub heathland Site Condition (favourable condition)
- Total number of different bird species counted
- Upland bird index
- Urban birds
- Use of marked coastal path*
- Visual influence of built development (inverse)*
- Water Framework Directive - good or better ecological status*
- Wild salmon and grilse - rod & line
- Wintering waterbird index*
- Woodland bird index
- Woodland Site Condition (favourable condition)

*Data unavailable for 2018 update