

Scotland's Natural Capital Asset Index

2019 Summary

"To waste, to destroy our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed.."

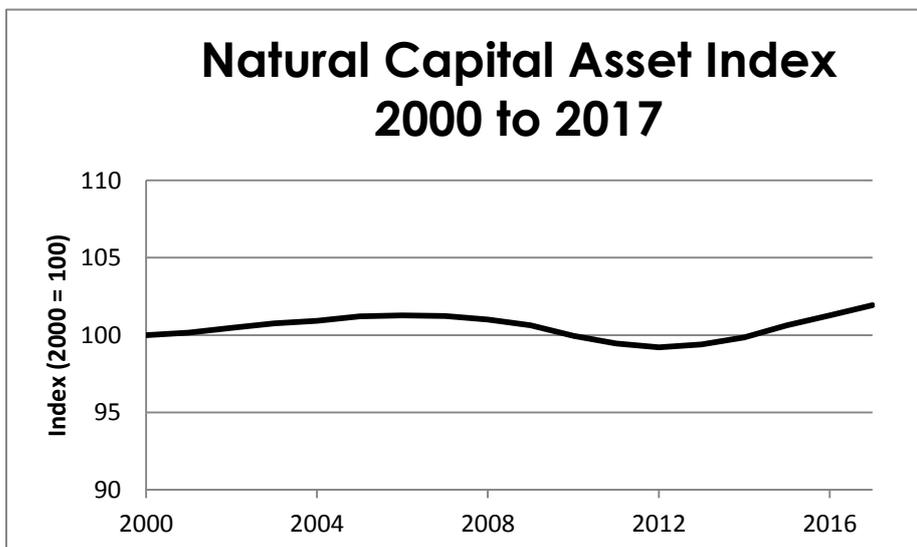
Theodore Roosevelt.

Key messages

1. Natural capital contributes to Scotland's prosperity.
2. Scotland's natural capital is now in an 'increasing' state with the index increasing over 2% in the last 3 years and has increased in each of the past 5 updates;
3. All habitat types are improving and increasing their contribution to human wellbeing. Heath and peatland habitats continue to show signs of recovery since lows in 2012.
4. Future threats to Scotland's natural capital include invasive non-native species and climate change.

Results

The potential of Scotland's habitats to deliver ecosystem services has improved over the past 15 years and is now at its highest level since 2000, recovering from a recent low in 2012. It is the first time Natural Capital has been officially classed as 'increasing' 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.



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 or 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 newly developed [ecosystem health indicators](#).



Results

The quality of all habitat types is now increasing for the first time; however, some underlying trends within these habitats may suggest their ability to contribute to ecosystem health and human wellbeing is being restricted.

Woodland extent continues to increase with new broadleaved woodland planting of 3,000 – 5,000 ha per year. Woodland birds continue to show marked improvements, increasing by 25% since 2000. However, designated woodland features in 'favourable' condition continue to decline and are now 20% fewer than in 2000 which may suggest similar declines in non-designated woodlands.

Heathland and peatland habitats are making a sustained recovery from historic lows in 2012, this is especially important considering heathlands are the most widespread habitats in Scotland. Whilst these recoveries are encouraging they only mitigate some of the decline witnessed since 2000. Upland bird species continue to decline.

The trend for freshwater habitats (inland surface waters) is encouraging although there can be a long time lag as lochs struggle to recover from the legacy of pollutants locked into the catchment or sediments. Other indications show that some rare species such as the pearl mussel are getting rarer.

Cultural service potential increased through increased interactions with the environment. The number of people visiting the outdoors one or more times per week is at its highest rate since 2000. This will increase the benefits derived from nature, for example, improved physical and mental health.

Given their proximity to populations, urban greenspace is particularly important for human wellbeing. Trends suggest these greenspaces are increasingly perceived as existing in "degraded states" which may limit interaction and the quality of experiences people derive from nature in their neighbourhoods.

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.

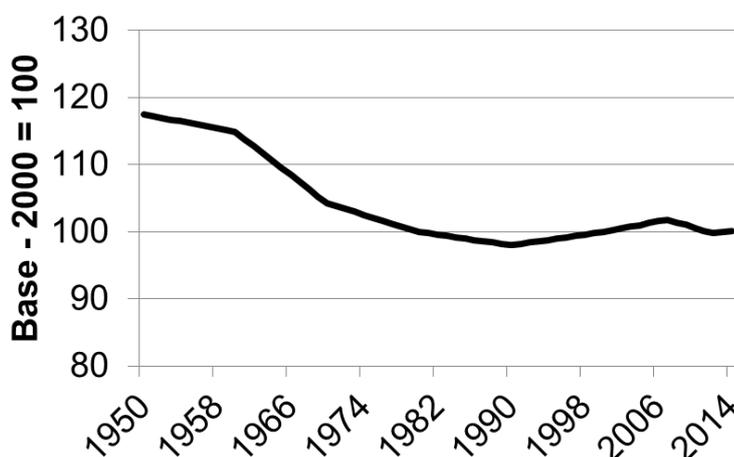
Historic trends of the NCAI

In 2014 a backcasting exercise was carried out 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



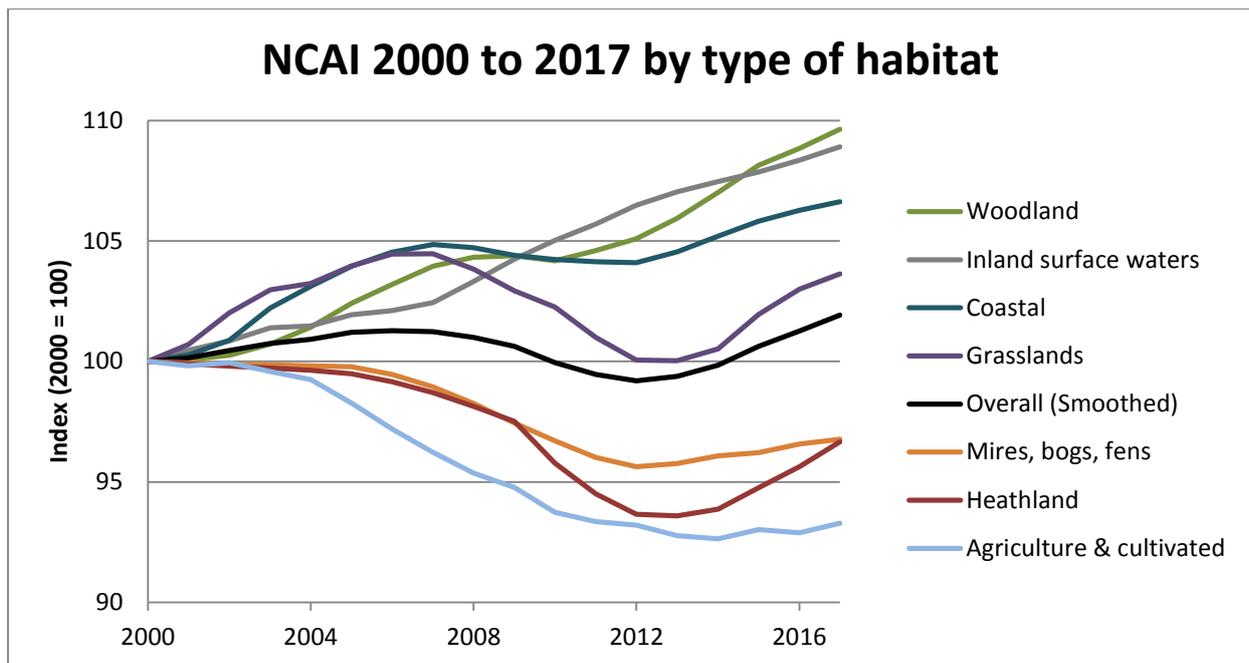


Figure #: NCAI 2000 to 2017, by type of habitat

Overall

All broad habitat types are increasing but there are declines in some components such as the quality of designated woodlands and upland bird populations.

Woodlands

- Continued planting of broadleaved deciduous woodland
- Modelling improvements have shown carbon capture to be more modest than previously thought.
- Designated natural features continue to degrade.

Inland surface waters

- The pollutants phosphorus and nitrates are at their lowest level since 2000
- Designated natural features declined to 2009 and have not yet recovered
- Wild salmon and grilse catches have seen dramatic drops in 2016 and 2017.

Coastal

- Improvements in designated natural features and bathing water quality.
- Wintering waterbirds numbers are 20% lower than in 2000.

Mires, bogs, fens

- Slight improvements in designated natural features over last few years
- Decline in many upland birds
- Limited knowledge about quantity and quality change for upland habitats

Heathland

- Steady improvements in designated natural features since 2010
- Decline in upland birds, such as curlews and golden plovers

Agriculture & cultivated

- Some increase in farmland birds, such as goldfinches and great tits
- Increased use of pesticides, although this trend may be reversing.
- Historical downward trends are driven by habitat extent loss.

Grasslands

- Species rich meadows are now at its lowest extent since 2000
- Reduced cattle and sheep numbers, impacting the provisioning yield of agricultural land

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 2019 update 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 this year.

Scotland's National Natural Capital Accounts

The Scottish Government and the UK Office for National Statistics have recently released 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 new [StoryMap](#).

More information about the NCAI, including trends for all terrestrial habitats, is contained on our website. The NCAI model and technical guidance are also available.

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)

