



Accounting for Nature:

A Natural Capital Account of the RSPB's estate in England





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Foreword

The RSPB has produced a Natural Capital Account for its nature reserves in England as a contribution to the debate about how best to reflect the value of nature in decision-making.

Our reserves are amazing; in England there are 110 of them covering over 60,000 hectares, from purple-clad heathland at Aylesbeare Common in Devon, through wildlife-rich wetlands at Minsmere in Suffolk, dramatic seabird colonies at Bempton Cliffs in the East Riding of Yorkshire, to swathes of restored blanket bog at Geltsdale, Cumbria.

However, until now we have not tried to quantify the value they provide to the public. The Natural Capital Account is the first step to doing just that, and even its partial assessment reports that the benefits provided by our reserves are more than double the costs of delivery.

These benefits are largely invisible in standard financial accounts, highlighting the contribution that Natural Capital Accounting can make in providing better information for decision-making. The account also demonstrates the importance of the public benefits provided by nature reserves and the need for public policy support to ensure that nature is managed in a way that is better for people and nature.

The RSPB has long understood that nature is deeply important to people and is also crucial for our long-term economic success. Back in 2002, in the run up to the World Summit on Sustainable Development, we assessed the global costs of degrading natural habitats along with the benefits of conserving them.

The conclusion was that financing an effective global programme for the conservation of remaining wild nature would yield an estimated benefit one hundred times greater than the cost. Around the same time, we estimated that our reserves supported over 2,000 jobs, providing evidence of their local economic impact, helping to dispel the myth that protecting the environment is an obstacle to economic growth.

Since then, the evidence from around the globe has been stacking up. We've had exhaustive research projects like the UK's *National Ecosystem Assessment* and the global assessment *The Economics of Ecosystems and Biodiversity* (TEEB) demonstrating emphatically that protecting nature is not just good for wildlife, but critical for people.

More recently, in 2011, the Natural Capital Committee (NCC) was set up to provide independent advice to the UK Government on the sustainable use of natural capital in England. Their work highlights that investing in Natural Capital delivers significant value for money

and generates large economic returns. For example, woodland planting, peatland restoration and wetland creation generate returns of up to nine times the costs of those activities.

Evidence continues to build showing how a healthy environment results in improved health (both physical and mental); richer educational experiences; enhanced recreation; inspiring landscapes and amazing wildlife spectacles; higher water quality and flood defence; better soils; improved pest control; and a more resilient economy, by securing more sustainable supply chains, and reducing business risk.

As we continue to learn more about the wonders and values of nature, the *State of Nature* report (2016) showed how biodiversity, the heart of Natural Capital, remains in trouble with 56% of UK species in decline. The costs of nature's decline are increasingly evident from concerns about pollinator declines, degrading soils, disconnection from nature, health concerns and flood events.

Why, when the benefits of better managing nature are so great, do these declines continue? The basic answer to this paradox is because we routinely fail to reflect either the full costs of environmental degradation or the full value of the benefits that nature provides in everyday decision-making.

Done well, I believe a Natural Capital approach (which is a broader concept than Natural Capital Accounts) must have a central role in correcting the current paradox. This approach needs to be at the heart of the way decisions are made by both the private and public sectors. It is gratifying to see pilots being explored by individual businesses and the approach is already reflected in some of the UK Government's recent initiatives, such as the Clean Growth Strategy and the National Infrastructure Assessment. This indicates movement towards the step change that is needed.

But, critically, Natural Capital approaches need to be applied in a way that reflects some of the more intangible values of nature. It is not possible to monetise all the values of wildlife and, therefore, there is a risk that Natural Capital assessments can exclude and even undermine the importance of biodiversity. This is increasingly acknowledged as a challenge in the way that the tools have been developed.

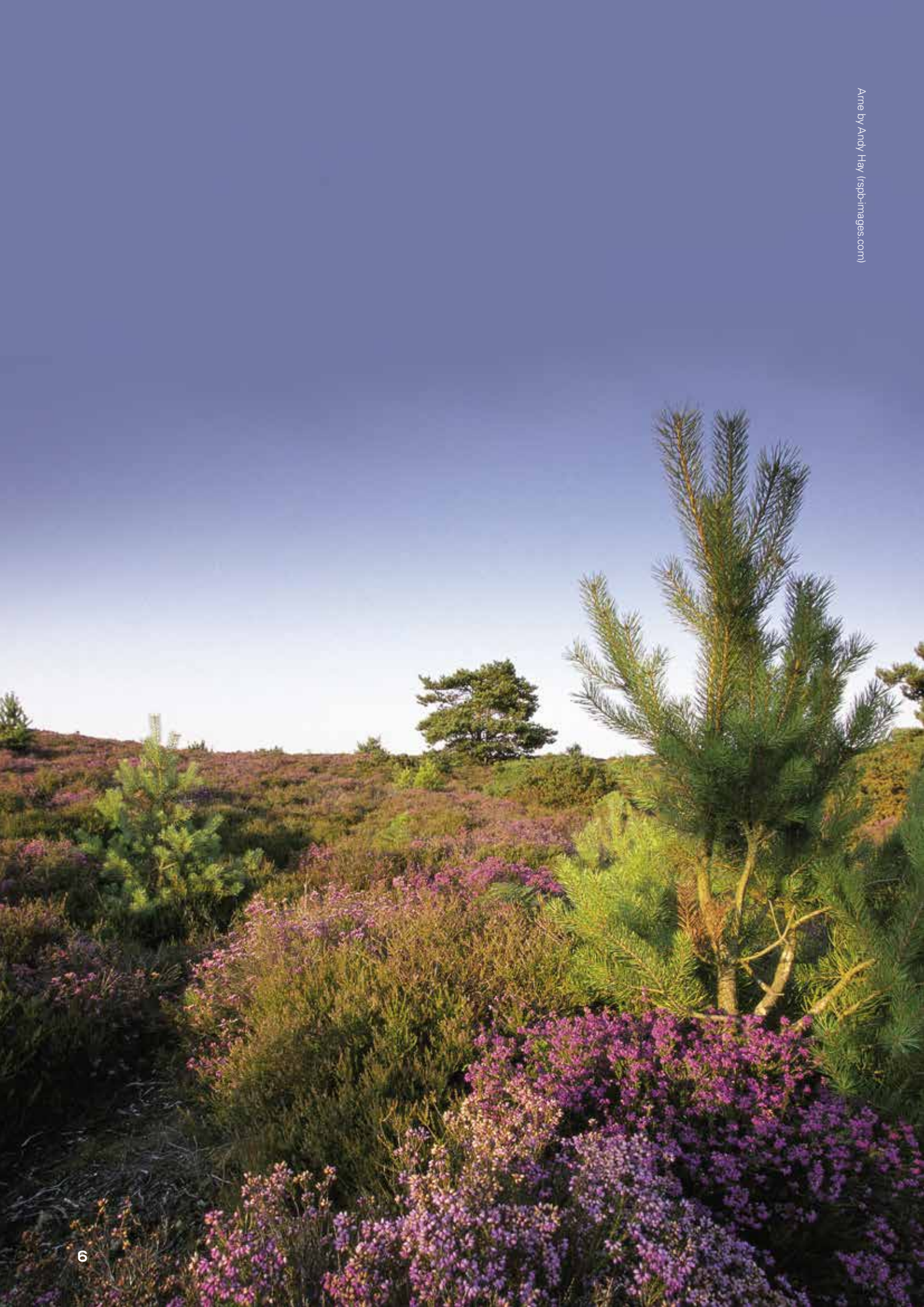
The report, using the RSPB estate in England, also demonstrates the steps that are needed to ensure that biodiversity's values remain visible within a Natural Capital Account — a tool that provides huge

opportunity for changing the way that nature's values are reflected in decisions. We argue that biodiversity targets (for sites, species, and habitats) are an essential first step in making Natural Capital Accounts work.

We hope this pilot will advance understanding of the importance and practicalities of undertaking Natural Capital assessments. In addition, we hope it helps to reveal the range and scale of benefits that we, and others, who manage the land and seas for conservation, provide to the public at large.

Martin Harper,
RSPB Director of Global Conservation





Summary

- Adopting a Natural Capital approach presents an opportunity to help address society's long-term failure to account for the full impact of natural resource decisions and the costs of maintaining nature. This fundamental shift in thinking is needed as, whilst there have been some notable conservation successes, our current ways of working have not stemmed the accelerating loss of nature.
- A Natural Capital approach is a stock-based approach. If applied well, this enables values that relate to the stock (notably ethical considerations of preventing extinctions of other species and retaining the natural world for future generations) to be combined with other economic values. Ethical values sit outside of economics and cannot be valued in the same way. Their values, as well as others that are not amenable to economic valuation, are better reflected by commitments that society has adopted in international, national, and other targets and laws.
- To succeed, a Natural Capital approach must complement, not replace, the traditional approaches to nature conservation. In practice, Natural Capital approaches have frequently been incompletely or incorrectly applied, with an over-emphasis on the quantifiable economic values, which can lead to perverse outcomes and hinder opportunities to restore nature and recover populations of wildlife. Badly done, a Natural Capital approach could actually add to the pressures on the natural world.
- The RSPB has developed a Natural Capital Account for its estate in England to demonstrate a practical example of how Natural Capital Accounting can support better management of natural resources, with biodiversity at its heart.
- The RSPB's Natural Capital Account reveals that our network of nature reserves, which protects some of the most important and special places for nature, also provide significant additional benefits for people – some of which we have been able to measure and quantify in monetary terms. In so doing, the Natural Capital Account provides the first estimation of the RSPB's delivery of our charitable remit, which is to conserve nature for the public benefit.
- Even though we were only able to measure some of the benefits that the nature reserve network provides, the value of these still outweigh the costs of managing the reserve network by 2:1.
- The account does not include monetary estimates of all of the benefits to society provided by the RSPB's nature reserves. The intrinsic wonders and beauty of a world rich in wildlife are largely immeasurable, let alone amenable to economic valuation. It also does not include monetary estimates of several other important ecosystem service benefits that are difficult to evaluate at this spatial scale, such as reducing flood risk, coastal erosion and water discolouration (which affects the costs of water treatment).
- The output of any Natural Capital Account will only ever be as good as the data that underpins it. This highlights the importance of quality datasets, including those collected, held, and maintained by the statutory agencies.
- We set out the steps that are needed when implementing a Natural Capital Account. This includes the critical step of the organisation making specific commitments to biodiversity. These should relate to local, national or international commitments to biodiversity, particularly for public bodies. The specified commitment should be supported by a long-term costed plan, which is fully reflected in a Natural Capital Account.



Natural Capital and biodiversity

1.1 Taking a Natural Capital approach

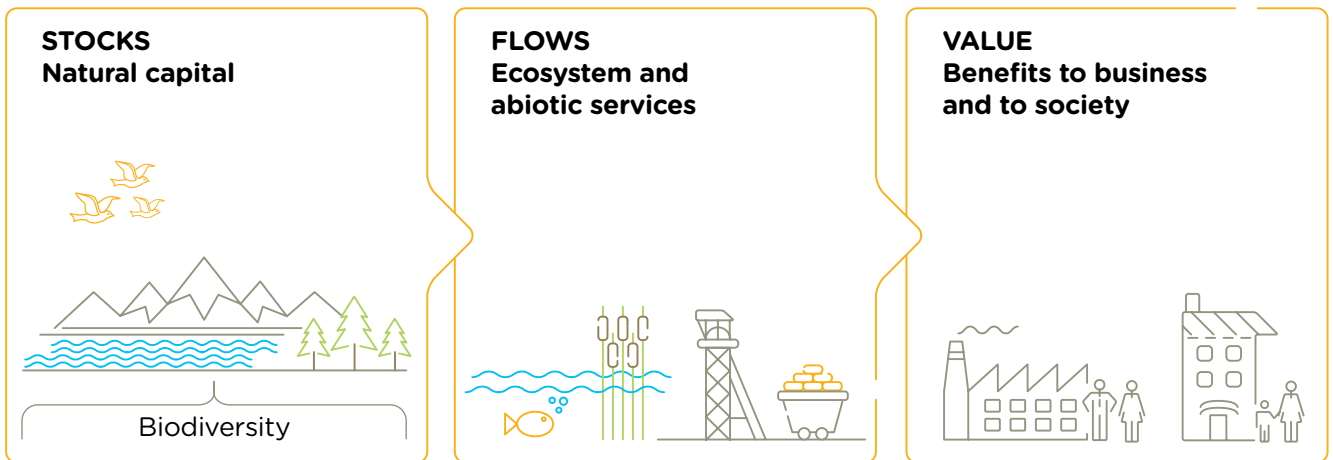
Humans depend on nature, not only for the provision of drinking water and food production, but also through the inspiring landscapes and amazing wildlife spectacles that enrich our lives. It is increasingly understood that protecting and enhancing the natural environment should not be considered as an economic cost, but as the foundation of a strong, stable economy and resilient society.

Yet, our economic system continues to fail to reflect the importance of nature in decisions that affect it. This long-term failure is at the heart of the over-exploitation of and under-investment in nature that has driven so much of the destruction of the natural world — a loss for both people and nature.

A Natural Capital approach sets out a framework that can address this failure, by better reflecting the values of nature during decision-making. If widely adopted, it could deliver huge benefits for nature and people.

This is increasingly being recognised, and reflected in recent initiatives by individual businesses to integrate a Natural Capital approach into their decision-making, as well as in public policy. It is reflected in global commitments and the UK Government has pledged to structure its 25 Year Environment Plan around the Natural Capital approach in order to deliver its commitment to improving the natural environment. Recent initiatives, such as the Clean Growth Plan and National Infrastructure Assessment, demonstrate how the approach of Natural Capital is gaining in recognition.

The Natural Capital Framework



Reproduced from the Natural Capital Coalition, 2016. "Natural Capital Protocol" naturalcapitalcoalition.org/protocol/

Natural Capital is the stock of living and non-living resources, including soils, land, freshwater, forests, atmosphere, oceans, ecological communities and the natural processes that underpin their functioning. The extent, condition, and location of these assets determine the flow of goods and services (AKA ecosystem services) that Natural Capital provides. The Natural Capital approach emphasises the

importance of the stock. For nature conservation, this is an important distinction from the ecosystem service approach, which is unable to reflect some of the most fundamental reasons that people care about saving nature. The Natural Capital approach incorporates values that relate to the stock (notably ethical considerations of preventing extinctions of other species) with economic values that relate to the flows of ecosystem service benefits.

1.2 Retaining visibility of biodiversity in Natural Capital



Woodland by Jodie Randall (iStock Images.com)

Biodiversity¹ is at the heart of natural capital, as the living component of the stock. Yet, the lack of visibility of biodiversity within Natural Capital approaches has been identified as a key issue in the pilot Natural Capital Accounts that the RSPB developed in consortium with PwC and eftec for the Natural Capital Committee (see eftec, RSPB, & PwC, 2015²). In addition, when the draft of the Natural Capital Protocol (a guide for business on implementing Natural Capital) was released for public consultation, over 100 comments from business and NGOs focused on the need to better integrate biodiversity concerns.

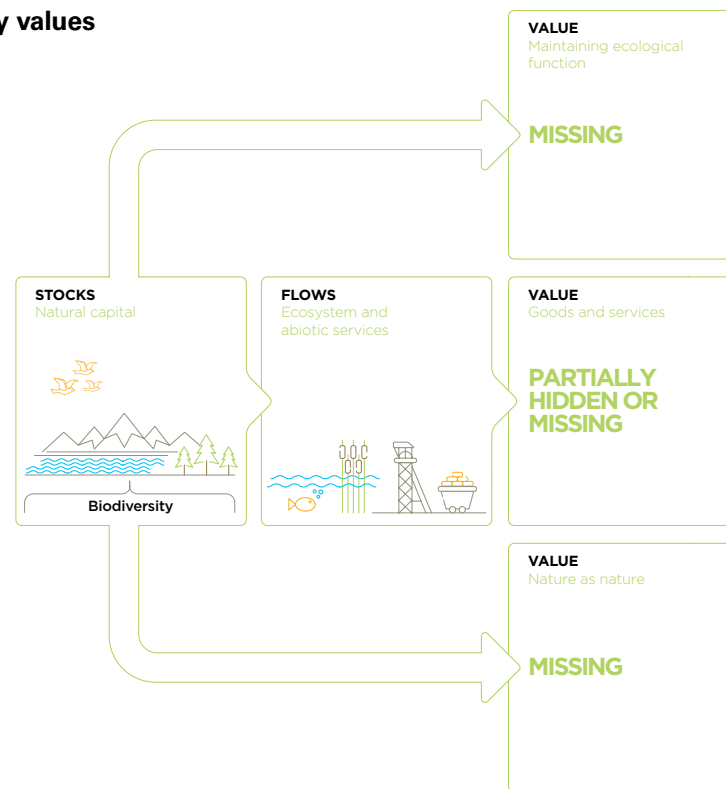
Indeed, implementing a Natural Capital approach can present potential risks to nature conservation when incompletely or incorrectly applied. In practice, the scientific and practical challenges mean that it is not possible to measure all of nature's values. For example, while we can estimate and value the carbon sequestered by a woodland, it is not possible to value England's woodlands reverberating with birdsong. Put simply, economic valuation will only ever be a partial reflection of nature's values and is unable to reflect the value of retaining the wonder of nature, for its own sake and for future generations to enjoy.

Given this, any approach to Natural Capital which fails to incorporate the role of biodiversity or over-emphasises the partially-quantified economic values will lead to perverse outcomes and hinder opportunities to restore nature and recover populations

of wildlife. There is no guarantee that increases in Natural Capital economic value will be accompanied by improvements in the 'stock' of nature and wildlife. Indeed, it is equally possible for the measurable economic benefits of nature to increase, while the value of the stock of nature declines. For example, an ancient woodland could be replaced by a non-native coniferous forest, increasing its Natural Capital "value" as measured by its rate of carbon sequestration and contribution to regulating the climate. Add some BMX cycle tracks and the recreational value is also enhanced. But, what is lost is irreplaceable and its value cannot be quantified.

A critical point is that the Natural Capital approach is a stock-based approach. If applied well, this enables values that relate to the stock (notably societal values that relate to the ethical considerations of preventing extinctions of other species) to be combined with other economic values. The RSPB is supported by 1.25 million members united by our shared and deeply held concerns for wildlife and the habitats and sites that support them. We believe that their support for our mission to create a world richer in nature is driven primarily by a deep appreciation of the intrinsic value of nature. This extends to support for rare and threatened animals and plants in remote places, often overseas where the majority of us will never encounter them directly. As in much of life, moral choices are considered alongside the economic concerns – they are not mutually exclusive.

Visibility of biodiversity values



Reproduced from Bolt *et al* (2016) and originally adapted from the Natural Capital Coalition, 2016. "Natural Capital Protocol"

In practice, a Natural Capital approach tends to focus on the quantifiable and monetisable economic values, often leading to biodiversity's "value" being hidden or missing. This is because monetised estimates only reflect relatively minor elements of the multi-faceted nature of biodiversity values, which can be categorised into three groups of value:

Ecosystem and biotic services:

Direct benefits to people are typically the easiest to assess, such as the value of hunting or wildlife watching. As the RSPB is well aware, wildlife watching is highly valued in the UK. While this value is important, it is likely to be a small element of biodiversity's total value.

Biodiversity also indirectly supports nature's ability to provide all the goods and services that we value. For example, bacteria's role in purifying water, and plants that help support populations of pollinators which ensure crops are fertilised. The values of these intermediate or supporting services are embedded

in the total values of nature but are rarely highlighted and therefore are not visible.

Maintaining ecological function:

While biodiversity provides benefits to people directly and indirectly as described above, it also has value as an asset, being the living component of the Natural Capital stock. While man-made assets tend to be replaceable, there are likely to be critical levels of biodiversity below which ecological function is disrupted. If biodiversity declines beyond a certain point, the natural functioning of the system can change in the short or long term in unpredictable, non-linear, and non-marginal ways.

Related to this is the role of biodiversity in the ecosystems ability to cope with shocks and change, such as new diseases and changes in climate. These systematic values, related to notions of persistence of resilience, do not lend themselves to marginal valuation reflected in economic valuation.

As such, biodiversity is nature's insurance policy, supporting a wider range of nature's benefits into the future. It also provides the opportunity to deliver different benefits, as desired by future generations.

For example, even 20 years ago, it was not appreciated that healthy peat bogs would play an important role in regulating our climate. Retaining as yet undiscovered and unappreciated roles of nature is a critical aspect of future proofing and commitment to inter-generational equity and fairness.

Value of nature as nature: Many people hold the deep seated value that saving nature is the right thing to do as stewards of this planet. These 'moral' values are often intertwined with other 'non-use' values, such as sense of place and cultural values. Regardless of how we refer to such values, it is clear they are extremely important and are also not amenable to robust monetary valuation.

Summarised from Bolt *et al*, 2016 *Biodiversity at the Heart of Accounting for Natural Capital*

Natural Capital Accounting

2.1 Natural Capital Accounting and biodiversity

“Our inability to convey the value of investing in environmental improvements and the benefits of preventing degradation has been a major factor in the loss of Natural Capital that has been seen over the past half century or more.”

Natural Capital Committee (2017)

Natural Capital Accounting is a rapidly-developing tool to support delivery of a Natural Capital approach. This report sets out how we applied the Corporate Natural Capital Accounting (CNCA) framework that the RSPB developed with eftec and PwC for the Natural Capital Committee (eftec *et al*, 2015) to our reserve network in England. As noted in the initial guidelines, the framework is still evolving as lessons are learned from organisations adopting the approach. Our experiences using the framework are intended to add to that growing body of knowledge.

The framework is designed to be used by landowners or other organisations which have responsibility for Natural Capital assets. Other approaches, such as the environmental profit and loss account developed by Kering,³ are more appropriate for those seeking to better understand their impacts through their supply chains, although the principles that underpin both have many similarities. In this report, references to Natural Capital Accounting relate to the Corporate Natural Capital Accounting (CNCA) framework.

The Natural Capital Account seeks to provide a more complete picture of the societal impacts of nature’s management, as well as the state of the Natural Capital asset and the costs of its maintenance. It mirrors and complements financial accounts, with the aim of moving environmental considerations from the periphery and into the centre of an organisation’s decision-making.

The use of Natural Capital Accounts is intended to contribute to the long-term safeguarding of Natural Capital assets through their monitoring and better understanding of their capacity to support benefits into the future. It aims to provide a more comprehensive account of an organisation’s impacts and dependence on nature currently and into the future, than is revealed by financial accounting.

Standard financial accounts have been designed and evolved over hundreds of years for the purpose of reporting to the shareholder. In the case of Natural Capital, conventional accounts overlook two important areas of information.

First, conventional accounts reflect the financial interests to the asset owner. In the case of Natural Capital this ignores the broader benefits and costs to society. For example, a farmer’s accounts provide information relating to management of land to produce food – the “ecosystem service” that the farmer is rewarded by the market to produce. This ignores the broader societal impacts, such as impacts on watercourses, landscapes, biodiversity, or on the greenhouse gas flux that affects the climate.

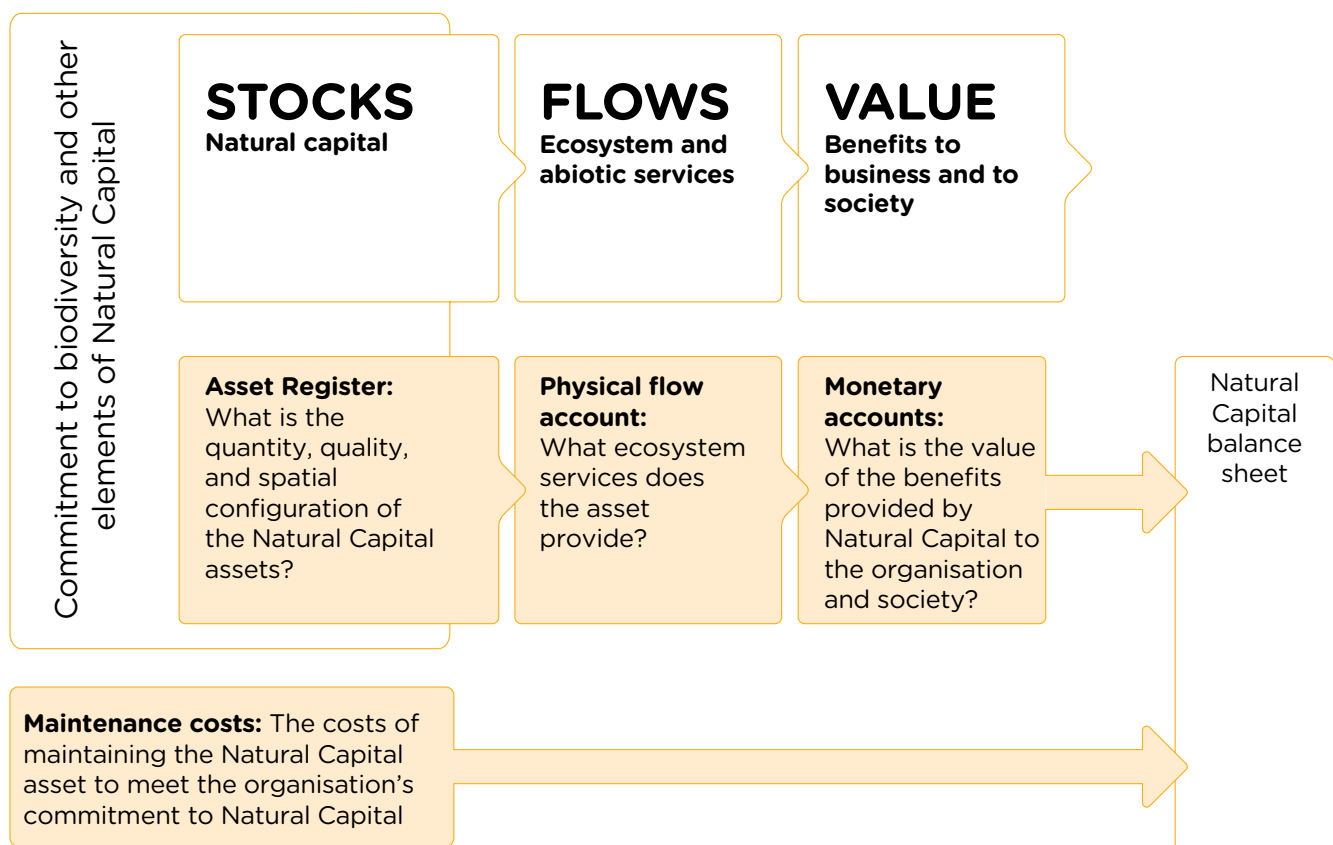
Second, conventional accounts are best designed to reflect the financial characteristics of man-made assets, like machinery, which tend to depreciate over time. Financial accounts reflect this by including a depreciation charge and any maintenance costs. Natural Capital assets, however, need not necessarily degrade over time, and if they are damaged, can often naturally regenerate. With some exceptions, notably minerals and energy reserves, most elements of Natural Capital assets are somewhat renewable. However, if allowed to excessively degrade, their ecological functioning can be irreversibly altered with the result that the asset becomes non-renewable, and in some cases (like ancient woodland) irreplaceable, over a meaningful timescale. We need to understand which elements of Natural Capital assets are at risk of decline and the costs required for their maintenance.

2.2 Steps to Developing a Natural Capital Account:

As shown in Figure 1, the Natural Capital Account is designed to report an “extended” balance sheet, supported by four accounting schedules (shaded yellow), which in turn draw on financial and environmental management data held by the organisation. While consistent with the NCC recommendations, the RSPB Natural Capital

Account emphasises the importance of identifying the commitment to the Natural Capital stock, and particularly to biodiversity. Details of this and the elements featured in Figure 1 are described further in the steps that an organisation takes to prepare the Natural Capital Account.

Figure 1: Developing a Natural Capital Account



Step 1: Define the organisation's commitments to the Natural Capital stock, including biodiversity

In the CNCA guidelines, the first step in developing a Natural Capital Account is for the organisation to define a "reference scenario," which can be interpreted in a range of ways. **We suggest that the first step requires the organisation to define its commitment to the Natural Capital stock, including biodiversity.** This enables the importance of biodiversity to be reflected in the account and mitigates the risk sometimes seen in Natural Capital accounts of over-emphasising the monetised value of single services while overlooking biodiversity. Unlike the monetised values reported in the balance sheet, this commitment can reflect the ethical considerations of preventing species extinctions, as well as retaining the choices of future generations to use Natural Capital for their benefit. It is also required to reflect the other values of biodiversity that are not amenable to monetary valuation.

This commitment then underpins the remaining steps to develop a Natural Capital account. It specifies the intended quantity and quality of natural capital assets and therefore the projected flow of environmental goods and services that are valued and reported in the account. It also provides transparency on progress towards the organisation's commitment to Natural Capital and the costs required to achieve them. This is returned to in Steps 2 and 3.

The initial CNCA guidelines state that the commitment to Natural Capital should be to maintain the current situation, at a minimum, or to improve the state of Natural Capital. One approach is for an organisation to commit to "no net loss" or "net gain" with methodologies available to measure and report on progress towards this commitment (such as BBOP, 2012⁴). Forest Trends and eftec have recently worked with Balfour Beatty to pilot how this commitment can be integrated into the Natural Capital Accounting methodology and how economic and ethically driven commitments to biodiversity can be successfully combined.

We believe there is great potential for this step to integrate individual organisations' commitments to Natural Capital to local, national, and international Natural Capital targets, including for biodiversity. This approach is particularly appropriate for public bodies and landowners in receipt of public money and would have the advantage of aligning individual organisations' commitments with national ambitions. Done well, and with the right policy support, this could enable greater accountability of the state of Natural Capital with respect to government targets, as well as more efficient use of public support to achieve their objectives.

Government has an important role to play in defining clear biodiversity targets at local, national,



or international levels, with respect to ecological functioning as well as its importance for people. The responsibility of organisations to deliver these societal targets are identified by laws and regulations, which need to be fully supported and enforced. Any additional contribution that an organisation chooses to commit to can then be specified and reported against using the Natural Capital Accounting framework.

Voluntary contributions beyond legal minimums may need public policy support if they are not incentivised through the market (i.e. they are true “public goods”). A system of Natural Capital Accounts can then be used to report the costs required to achieve the specified asset condition, compliance with environmental duties, as well as the societal benefits provided.

Step 2: Assess the State of Natural Capital and Report the Asset Register

The foundation of any Natural Capital Account is the **asset register**. The Natural Capital asset register is an inventory of biophysical indicators of the extent, condition, and the spatial configuration of the Natural Capital asset stocks. The state of the asset will affect its ability to maintain the provision of ecosystem services into the future and is also important to societal values that relate to the stock, including nature conservation.

The asset register reports on the state of Natural Capital with respect to the organisation’s commitment to biodiversity made in Step 1. Although the initial guidelines viewed the asset register as a supporting schedule, we believe it should be included in the reporting statements. This will provide necessary transparency and information on responsibilities of maintaining “minimum” Natural Capital condition.

Step 3: Estimate maintenance and remediation costs to achieve Natural Capital condition in the maintenance cost account

The **maintenance cost account** reports the cost of maintaining the assets, as well as any additional expenditure that is required to achieve the minimum asset condition specified in Step 1. Where Natural Capital condition falls short of what has been committed to, the actions and investments needed to achieve the minimum condition are identified. If the action is considered to be within the control of the organisation, then the costs of implementation are identified and reported in the maintenance cost account.

Step 4: Identify, measure, and report the ecosystem service flows supported and delivered by the Natural Capital asset and report in the Physical Flow Accounts

The **physical flow account** records the expected flow of goods and services, which are dependent on the Natural Capital asset stocks identified in the asset register. It reports the provision of both market and non-market goods. Another critical difference between financial and Natural Capital Accounts is that it reports both the private value that the organisation receives (some of which is reported in financial accounts, including income received from sale of products produced, such as biomass) and the external benefits that society derives from the Natural Capital assets.

Step 5: Value benefits provided by the Natural Capital asset to the organisation and others

The **monetary account** reports the annual value of the flow of goods and services net of the costs of "production." The value includes both the benefits derived by the organisation from the Natural Capital assets ("private value") and wider societal benefits ("external value") from natural capital. The societal benefits are valued in monetary terms but do not reflect actual financial flows.

Step 6: Prepare the Natural Capital balance sheet

The Natural Capital balance sheet is the final reporting statement, providing information on the discounted present value of expected future net benefit flows provided by the Natural Capital assets, net of the maintenance costs of managing assets in a specified minimum condition (defined in Step 1).

The Natural Capital balance sheet for the RSPB is shown in Table 3 (page 24). Following conventional financial accounting standards, it reports the asset value and liabilities, with negative values reported in parentheses. The elements of the balance sheet (as indicated in Table 3) are described below:

1. The Natural Capital **asset value** is calculated as the sum of discounted⁵ projected future benefits that are expected into the future, both to the organisation (private value) and others (external value), net of production costs. This is a different approach to that taken in financial accounts, where asset value is based on historic cost paid for the asset and revaluations of their market value. By taking a forward-looking approach, the Natural Capital Account can reflect the dynamic nature of Natural Capital and its ability to regenerate as well as deteriorate over time under different management conditions, and affecting its ability to support benefits into the future.

2. The **private value** is the value provided by the Natural Capital asset to the organisation itself. These are frequently, but not always, reflected in financial flows, such as income received from the sale of products such as crops or biomass, or visitor entrance fees. The asset value is reported net of the costs of producing these benefits, such as the costs of machinery and inputs to farming, or maintaining car parks and other visitor facilities. These costs are commonly borne by the organisation, which can result in the asset value being negative.
3. The **external value** is the value to those outside the organisation. These are often benefits or costs that are not reflected in financial accounts. These can be public goods that the organisation is not directly rewarded for providing without public policy intervention. The beneficiaries may be local (such as pollination benefits to neighbouring farms) or global (such as global climate regulation).
4. **Liabilities** are the discounted sum of the expected costs of maintaining the asset in perpetuity, achieving the minimum condition required either by law, or as a voluntary commitment stated by the company in Step 1. Liabilities that are driven by legal obligations (legal maintenance obligations) are separately identified from those that the organisation voluntarily adopts (other maintenance provisions). The account also differentiates between the costs of maintenance that accrue to the organisation itself, and those that are supported by others, such as through the contribution of volunteers.

The balance sheet includes a baseline year and reporting year, enabling changes from a given baseline to be reported. In the initial CNCA guidelines, the specification of the baseline was left open including the option to relate to the reference scenario (i.e. intended Natural Capital condition). We believe the baseline is most useful as a historic point in time that is relevant to the organisation, such as the start of a new strategy. This enables an organisation's progress over time to be reported against.

The baseline value is reported with changes in value identified as being driven by changes in Natural Capital condition (cumulative gains/losses); Natural Capital extent (additions/disposals); and other factors, such as changes in management, markets, and other factors not directly related to the Natural Capital asset (revaluations and adjustments).

Developing a Natural Capital Account for the RSPB estate in England

The aims of the RSPB's reserve network are to:

- Protect, enhance and create habitats of high conservation value and thereby benefit the priority species which they support;
- Improve land management in the wider countryside by demonstrating best practice and trialling new ideas;
- Provide inspiring first-hand experience of nature.

The RSPB estate in England comprises 110 nature reserves covering over 60,000 hectares. They vary hugely in character, from the swathes of heathland on the south coast at Arne in Dorset, through to the largest coastal wetland created in the UK at Wallasea Island in Essex, the dark hills of Dove Stone in the Peak District, and the spectacular seabird colony on Coquet Island in Northumberland.

These reserves often play a critical role in supporting their local economies, employing people directly and supporting the local tourism industry. Estimates in 2011 reported that the reserve network in England supported over 2,000 jobs per year. While we have understood the local economic impacts for some time – employment and local income generated – until now we have not quantified the broader benefits to society that our reserve network delivers.

RSPB nature reserves are managed to protect and restore species and habitats – special places for nature, as well as for people. In addition to providing an important contribution to protecting wildlife, they deliver a suite of other “economic” ecosystem service benefits. Most of these benefits are not reflected in the financial accounts, which are limited to the monetary benefits (notably from farming and visitor receipts), and are far outweighed by the costs of maintaining the reserve network. For the first time, the RSPB Natural Capital Account reports the magnitude of some of these previously “invisible” public benefits that are provided by our conservation activities. It also highlights those public benefits where economic valuation is not currently possible.

This first iteration of the Natural Capital Account has been prepared for RSPB reserves in England only, with the intention to cover the rest of the UK network in future work. The choice to limit the pilot account to England was driven largely by the lack of data about Areas/Sites of Special Scientific Interest currently available from the statutory agencies for countries other than England. The Natural Capital Account for England includes the reserves in the RSPB “Definitive List”⁶ with full details in Annex 1.

Step 1: RSPB commitment to Natural Capital, including biodiversity

The RSPB has a strategy to enhance nature and provides an important contribution to achieving the Government's 2020 commitments to biodiversity in England. These translate as the RSPB's commitment to Natural Capital, being to:

- Ensure that there is no RSPB-managed Site of Special Scientific Interest (SSSI) where the RSPB is identified as responsible for the cause of unfavourable condition (as assessed by the statutory conservation agency, Natural England)
- Increase the area of priority habitat
- At a minimum to maintain (and ideally increase) the breeding populations of “Birds of Conservation Concern” and key colonising species on the RSPB's estate.⁷

These commitments reflect national priorities set out by the UK Government in the England Biodiversity Strategy. The list of priority bird species are those for which the RSPB's estate plays, or could potentially play, an important direct role in the conservation of their UK breeding population. The full list of priority bird species is shown in Annex 2 with the criteria used to identify them.

Sites of Special Scientific Interest (SSSIs)

Around 65% of the RSPB estate is notified as SSSIs. The England Biodiversity Strategy includes the commitment for 50% of sites to be in favourable condition by 2020. Although the condition of SSSIs is protected by law to conserve their biodiversity or geology, there is no legal requirement for landowners to manage SSSIs in ways so as to achieve favourable SSSI condition. They are, however, required to notify the relevant statutory nature conservation agency about any plans that could damage the notified interest of an SSSI and to receive consent for the action.

The condition of SSSIs is assessed by the statutory nature conservation agencies at least once every six years, using a standardised monitoring protocol known as Common Standards Monitoring (JNCC, 2004a), resulting in an assessment of the overall condition of each SSSI feature or unit, ranging from favourable, unfavourable (recovering, no change, or declining), to part-destroyed/destroyed.

Where a SSSI unit or feature is assessed to be in unfavourable condition, then the statutory nature conservation agencies should identify measures that are needed to achieve favourable condition, known as remedies.

While the assessment has its flaws, where applied it results in well-defined data that is widely available for SSSIs in Scotland and England, and which is also being applied to SSSIs in Wales and ASSIs in Northern Ireland. Usefully in the context of Natural Capital Accounting, it also identifies responsibilities for action required to achieve "favourable" condition. This enables the responsible organisation to cost the identified remedies and report them in the maintenance cost account of the Natural Capital Account.

Step 2: Assess the state of Natural Capital and report the Asset Register

A summary of the asset register for the RSPB estate in England is shown in Tables 4-8 at the end of the report with details of the underlying analysis provided in Annex 3. The asset register reports the state of Natural Capital across the estate and identifies condition with respect to the commitments made in Step 1. In summary, the asset register reports that:

- The area of RSPB-managed SSSI land for which the RSPB is responsible for the cause of unfavourable condition has declined from 3.5% in 2005 to 0.03% in 2016. The outstanding feature in unfavourable condition is due to the presence of a non-native invasive plant species *Crassula helmsii* at Dungeness. No remedy has been identified by Natural England. This species is extremely difficult to control, although work is underway elsewhere to identify a suitable bio-control agent.
- Between 2000 and 2016-17, the RSPB increased the area of priority habitat by creating (or re-creating) approximately 3,000 hectares of priority habitat on land of low conservation value, and by restoring about 3,400 hectares of coastal and floodplain grassland (primarily through raising water levels). The main types of habitat (re)creation that have taken place on land of low conservation value have been through: the conversion of arable land to floodplain and coastal grazing marsh, intertidal habitat or calcareous grassland; the conversion of mineral and peat extraction sites to reedbed; and the removal of conifer plantation from afforested heathland.

- Population trends of priority bird species on the area of land present in 1995 show that 57% of RSPB priority species increased, 12% were stable, 5% were unknown (two species of seabird which are not counted every year across all reserves) and 26% declined by more than 25% below their baseline. Of the 30 priority breeding species populations on land acquired and entered into habitat (re)creation between 1995-2012, 87% increased, 3% were stable, and 10% declined.

The asset register shows that the RSPB has met its commitments specified in Step 1, with one outstanding action that is within the organisation's control to maintain population trends of the priority bird species. As, by definition, the priority species include those facing the greatest ongoing national declines, it is expected that some populations continue to be in trouble even on nature reserves. Reasons for this can include changes in the wider marine environment affecting conditions for seabirds which nest at reserves, and changes in conditions in species' wintering grounds or on migration. In cases where a population of a priority bird species had declined more than 25% below its baseline level, we first compared the species' population trend on RSPB reserves with its national population trend. We reviewed whether the changes on our sites are likely to have been due to factors within, or beyond, the control of individual sites. Of the 11 species which had declined below their baseline level on reserves, the declines of four of these species (ringed plover, little tern, Sandwich tern and nightjar) were considered likely to be, at least in part,

due to factors within the control of RSPB reserves.⁸ For these four species, we then reviewed what action had been put in place to benefit those species and assessed outstanding actions that may be beneficial (see Table A3.3). These actions have been put in place. However, the action for Sandwich tern was not successful and further work has been identified and costed as described in Step 3.

Step 3: Estimate maintenance and remediation costs to achieve required Natural Capital condition in the maintenance cost account

The maintenance cost account (shown in Table 1) reports the costs of activities required to achieve minimum asset condition and identified restoration costs, where the condition of Natural Capital is below the minimum condition level committed to in Step 1. As expected, the reserves are managed to deliver good ecological condition. This means that ongoing maintenance tends to be fairly stable, with the exception of newly-acquired land, which often requires considerable initial investment. Table 1 reports the ongoing maintenance costs of the natural assets on our reserve network in England, including full cost recovery for reserve, regional and HQ staff employed to support maintenance of reserves. The costs relating to the ongoing delivery of the Natural Capital ecosystem service benefits (i.e. costs of delivering recreation, farming, volunteering, and education) are netted from the asset benefits rather than reported as a Natural Capital liability. This is because they are not directly related to the management of the Natural Capital asset.

The maintenance work carried out by volunteers, which contributes to the management of the Natural Capital asset, is also considered as a cost. Without the gift of time, this work would have to be paid for in other ways. The value of this work is valued using the VIVA (Volunteer Investment and Value Audit) methodology (Gaskin, 2011), which estimates what would have to be paid to deliver the work of volunteers in the labour market.

The liabilities include any outstanding expenditures that are required to meet the minimum Natural Capital condition, including that reflected in the biodiversity commitment that the organisation has stated in Step 1. As identified in Step 2, the RSPB has achieved its commitments, with the exception of one outstanding measure identified to arrest or reverse the decline of priority bird species on RSPB land. This relates to action to provide suitable habitat for breeding Sandwich terns at Dungeness in Kent. Here, shingle islands in gravel pits have been re-worked to make them more suitable for nesting terns, and regular maintenance is carried out to maintain them in suitable condition. However, this has not proved successful at attracting back breeding Sandwich terns, to a great extent due to changes in water levels in the gravel pits, which is outside the control of the RSPB. Following this failed attempt, further work was needed to restore these islands to a suitable condition for nesting.⁹ The estimated cost of this work (£130,000) is reported as a liability in the Natural Capital Account.

Table 1: Maintenance costs of Natural Capital across the RSPB's English nature reserves

Annual costs £/yr	Private	External
Reserve costs	12,300,000	
Regional and HQ support staff	2,000,000	
Value of volunteering time		3,600,000
Outstanding restoration costs		
Dungeness shingle islands	130,000	
Total	14,430,000	3,600,000

Step 4: Identify, measure, and report the ecosystem service flows supported and delivered by the Natural Capital asset and report in the Physical Flow Accounts

An initial qualitative assessment by internal experts,¹⁰ identified the expected ecosystem service and societal benefits provided by the RSPB estate as shown in Table 2. The significance of these ecosystem services ranges from importance across the estate (such as recreation) and others restricted to a small number of sites (such as flood regulation). The estate is judged to be particularly important for nature conservation, recreation, volunteering opportunities, climate change mitigation, and landscape/aesthetic reasons. Flood regulation, coastal erosion, climate change adaptation and provision of reliable water flows are also expected to be significant at certain sites.

Based on data compiled by the RSPB and a review of the scientific literature, the physical quantities of ecosystem goods and services are estimated across the estate. Full methodological details are given in Annexes 6 and 7. In summary, the RSPB reserve network in England:

- **Produces an overall climate cooling effect, sequestering 110,000 tonnes of CO₂^e per year, including emissions from livestock and fuel use of machinery and vehicles used on our reserves;**
- **Welcomes at least 1,717,000 recreational visits a year;**
- **Supports 3,500 volunteers annually, who contribute to the maintenance of the RSPB's reserve networks in England through their support of biological surveys, habitat management, fence and path maintenance, and visitor engagement;**
- **Provides over 100,000¹¹ connections to nature experiences every year.**

While the Natural Capital Account is able to reflect a much broader perspective of the importance of Natural Capital to the reporting organisation and society, it will always remain partial due to limitations in scientific understanding and availability of data. In some cases, this will be improved over time. However, it needs to be accepted that there remain considerable challenges to robust quantification.

We have, therefore, not been able to quantify the contribution our reserves make to reliable flows of clean water, flood regulation, or reducing coastal erosion. Detailed site level estimates, as discussed on page 25, suggest that these benefits are likely to be very significant in a number of places. However, the current lack of available models that enable reliable estimates to be calculated means that it is has not been possible to determine the impacts of our land management as a whole on riverine water flows or coastal flood risk mitigation.

Table 2: Natural Capital goods and services provided by RSPB nature reserves in England

Nature's benefits										
Equable climate	Clean Air	Reliable flows of clean Water	Flood risk and other hazards	Biomass	Recreation	Food	Landscape, aesthetics, mental restoration	Nature conservation	Volunteering	Education/ connection to nature
Significance of nature's benefits										
●		●	●	○	●	○	●	●	●	●
Scope of financial account										
Scope of Natural Capital Account										

Key:

- Significant benefit flow widely across estate
- Some benefit widely across estate
- Significant at selected sites
- Some benefit at selected sites
- No benefit
- Total benefits monetised
- Partial benefits monetised
- Not available

Steps 5 and 6: Preparing the monetary accounts and Natural Capital balance sheet

Full details of the methodologies used to value the net benefits provided by the reserve network are given in Section 4 with full details in Annexes 6 and 7. The Natural Capital balance sheet for the RSPB in England in 2016/17 is given in Table 3.

Table 3: Natural Capital balance sheet for RSPB nature reserves in England

2016/17 (PV £m)		Value to the organisation		Value to others	Total value
		Private value	External value		
Assets					
The discounted sum of benefits provided by the asset in perpetuity	Baseline value (00/01)	①	(73)	681	608
	Cumulative gains/losses	②	–	170	170
	Additions/disposals	③	21	26	47
	Revaluations and adjustments	④	93	155	248
	Gross asset value		41	1,031	1,072
Liabilities					
The discounted sum of costs of maintaining the Natural Capital asset to the specified minimum condition in perpetuity	Legal maintenance obligations		–	–	–
	Other maintenance provisions		(448)	(80)	(528)
	Total net maintenance provisions		(448)	(80)	(528)
Total net Natural Capital Assets			(407)	951	544

Note: Following accounting convention, negative values are reported in parentheses

- ① Value of the asset in the baseline year
- ② Change in value due to changes in Natural Capital condition
- ③ Changes in value due to acquisitions or disposals of assets
- ④ Changes in value due to other factors

The asset value is reported for 2016-17, identifying changes from the baseline, which is set as 2000-01. A baseline year of over 15 years ago enables the account to report the “value added” of the RSPB, as the impacts of changes in land management can often take a number of years to realise their benefits. The account reports that the total asset value (£1,072 m) is more than twice the cost of maintaining the asset (£528m).

Even the partial value reflected by the limited set of benefits that could be measured and valued outweighs the maintenance costs by 2:1. The monetised benefits do not include the primary reason for the reserves, which is the value of retaining a world rich in wildlife, or important ecosystem service benefits like reducing flood risk and coastal erosion.



Role of reserves in reducing flood damage and coastal erosion

While estimates across the estate are not available, site-based assessments indicate that the value of flood defence at some RSPB sites is likely to be very significant. For example, an assessment at Hesketh Out Marsh indicates that the value of flood defence, which intertidal salt marsh contributes to, generates benefits of £165,000 per year (MacDonald *et al.*, 2017), which would augment the asset value by £5 million alone.

Managed realignment at the RSPB's Medmerry is reported to provide flood protection, saving recurring coastal protection expenditure (which averaged £300,000 per annum), while also providing compensatory habitat for wildlife. This project has estimated benefits of over £90m, compared with project costs of £28m.

MacDonald, M.A., de Ruyck, C., Field, R.H., Bedford, A. & Bradbury, R.B. 2017. Benefits of coastal managed realignment for society: Evidence from ecosystem service assessments in two UK regions. *Estuarine, Coastal and Shelf Science*. <https://doi.org/10.1016/j.ecss.2017.09.007>

The Natural Capital Account reflects the reality that the costs of maintaining the reserves exceed the value received by the RSPB. This is no surprise, as the reserves are paid for and managed to help create a world richer in wildlife — for its own sake and also for people, but not for profit. While the RSPB is supported to deliver societal and nature's benefits through donations, other organisations (particularly business) are not wholly incentivised to do so without further public policy support.

The partial external asset value is over 25 times greater than the private asset value, highlighting the limited picture often revealed by financial accounts alone. The Natural Capital Account reveals the significance of external values including the value of our reserves in contributing to natural climate regulation, enhancing the wellbeing and cultural values of the visitors on our reserves, and volunteering.



Behind the balance sheet

In the baseline year, it is calculated that the asset value to the RSPB is -£73 million. This negative asset value is driven by the costs associated with providing recreation and managing volunteers. These are deemed “production costs” relating to the provision of the private and external benefits of the reserves, rather than with the maintenance of the Natural Capital assets themselves. The negative asset value reflects the fact that nature reserves are managed for wildlife and the public benefit, not for profit.

The increase in private asset value between the baseline and reporting year is largely driven by an increase in the reported financial returns of farming. This is likely in part to reflect changes in internal financial accounting systems, but is also driven by improvements in economic conditions (see page 30).

The external asset value in the baseline year far outweighs the costs incurred to support their delivery (the costs are reflected in the private asset value). The value is dominated by the contribution of the reserves to regulating global climate change as well as the benefits of volunteering and recreation.

Climate regulation

The RSPB’s reserve network in England is estimated to produce an overall climate cooling effect, equivalent to the effect of sequestering 110,000 tonnes of CO₂ per year, including emissions from livestock and fuel use of machinery and vehicles used on our reserves.¹² Following UK Government appraisal guidance, the contribution of the reserve network to regulating the global climate is valued based on the costs of mitigation. This includes the projected increases into the future, reflecting the expected increase in the costs of mitigation.

This represents a significant **external asset** value, accounting for nearly half the baseline value. Enhancements in habitat condition deliver a significant increase in the net cooling effect of the reserves and represents the **cumulative gain** of £170 million in asset value between the baseline and reporting year.

The greenhouse gas (GHG) flux can produce a net warming effect, or a net cooling effect, on the climate over a given period (for example a single year). Virtually all semi-natural habitats produce a net cooling effect on the climate within a given period, with any emissions of GHGs from their management usually more than offset by their net uptake of carbon dioxide. However, we recognise that nature conservation management does not necessarily maximise the net cooling effect on the climate. There can be trade-offs between managing land to maximise biodiversity benefit and climate regulation benefits. It is also important to note that even though an area of land may provide a net cooling effect in a given year, this needs to be considered with respect to the historic baseline and with respect to the longer-term potential of the site.

Between the baseline year (2000) and reporting year (2016-17), very little change in rates of sequestration were estimated to occur on the RSPB’s 2000 land area, as net emissions tend to be more or less stable under good management. For this reason rates of flux are expected to remain more or less constant into the future. The exception is on areas of upland peatlands and moorland where re-wetting projects halted the release of CO₂ from dried out peat, with re-established bog plants re-commencing the process of carbon sequestration.

The change in GHG flux on the RSPB estate is largely driven by changes seen on areas of land acquired since 2000, with the most significant impact resulting from the conversion of agricultural land to lowland wet grassland and intertidal habitat. On the ca 20,000 ha of land acquired by the RSPB in England between 2000 and 2016, the estimated GHG flux at the time of acquisition was close to the equivalent of about +1,000 tonnes of CO₂ per year, contributing to climate warming. By 2016, this same area of land was estimated to be sequestering the equivalent of approximately -23,000 tonnes of CO₂ per year. The largest estimated reductions in warming per unit area have been through the creation of wetland habitats on arable land, and of wetland habitats on dry grassland on organic soils. The enhanced contribution of reserve areas to regulating the climate is reported as a **cumulative gain** equivalent to an increased **external asset** value of £170m.

Recreation

The RSPB estate in England is estimated to welcome over 1.7 million visits a year. Increasing evidence indicates how important access to the natural world is for health and wellbeing. Outdoor recreation has significant links to health, given that it can provide fresh air and opportunities for physical activity, socialising and solitude, which all impact on health and wellbeing (Henley Centre, 2005¹³). Research has linked access to nature with supporting stress reduction, mental health (Bragg and Atkins, 2016¹⁴), cognitive functioning and mood (Bratman *et al*, 2015¹⁵), as well as increasing physical activity levels (Lovell, 2016¹⁶). Studies have demonstrated that people enjoy physical activities more in greener environments and access to natural environments is associated with higher rates of physical exercise (Lovell, 2016).

With parameters set to most accurately reflect the RSPB reserve network, the external value per recreational visit is drawn from a meta-analysis presented in Sen *et al.* (2013), the study that was used in the UK National Ecosystem Assessment (2011). This represents a significant contribution to the external asset value, representing nearly 40% of the total external asset value in the reporting year. The increase in visitors on newly acquired reserves is not expected to be driven by significant changes in the Natural Capital asset itself, but rather influenced by facilities and preferences. This increase in visitor numbers observed on the original reserve areas is therefore reported as a **revaluation/adjustment**. The net costs of managing visitors, including entrance fees, car park receipts, visitor facilities, and visitor engagement staff costs (full cost recovery) are reported as a (negative) **private asset** value.



Volunteering

Nearly 3,500 volunteers annually contribute to the maintenance of the RSPB's reserve network in England through their support of biological surveys, habitat management, fence and path maintenance, and visitor engagement. Volunteering affects the Natural Capital balance sheet in several different ways. First, evidence shows that volunteering enhances the wellbeing of volunteers, including perceived changes in employment opportunities and social engagement benefits. The estimated value of "regular" volunteering is estimated by the Department of Work and Pensions (2013).¹⁷ As the literature is extremely limited with respect to changes in wellbeing from volunteering, this is treated as an upper bound with a lower bound calculated as

the hourly wage rate. The midpoint between the two estimates is used in the account and reported in the Natural Capital balance sheet as an **external asset**.

Without the contribution of volunteers to maintaining reserves, the RSPB would incur greater staff costs. The work of volunteers can be thought of as the contribution by others to maintaining the Natural Capital asset and is therefore reported as an **external liability** in the Natural Capital Account. Finally, the costs that the RSPB incurs managing and co-ordinating reserve volunteers (excluding roles relating to cafés or shops) is considered a "cost of production" and is therefore reported as a negative **private asset**.

Connection to nature

Connection to nature experiences can help people to develop deeply-held feelings and attitudes towards wildlife and the world we all live in. Research shows that connection to nature has positive impacts on children's education, physical health, emotional wellbeing, and personal and social skills, and helps them to become responsible citizens.¹⁸ First-hand experiences can bring education to life, making lessons more vivid and interesting for pupils. This enhancement of children's understanding of nature could make an important contribution to their future wellbeing.

Nature reserves provide a direct way to provide more children with opportunities to connect with nature, particularly for those who do not have access to nature close to where they live. RSPB reserves in England support over 100,000¹⁹ "connection to nature" experiences every year.²⁰ The costs of providing these connections to nature experiences are reported as a negative **private asset**. Due to the lack of relevant and robust estimates of the benefits, no value is reported in the Natural Capital balance sheet.

Food and farming

Data on farming income (including sale of crops, livestock, wool, silage, timber, rent from grazing, and farming subsidies) net of cost of inputs (including veterinary and agricultural services, seeds, fuel, fertilisers, and labour) are reported in the RSPB financial accounts and reported in the Natural Capital Account as a **private asset**. Changes in net income between the baseline and reporting year are reported as a **revaluation/adjustment** as the change is not considered to be wholly attributable to change in the quantity or quality of the Natural Capital asset itself, but rather to changes in management or market conditions. Newly-acquired land is reported as an **addition**.

Farming-related subsidies are also taken from RSPB financial accounts and the present value of expected future receipts are reported as a private asset, net of any costs related to activities to receive the subsidy. Where the subsidy delivers a societal benefit, this is assumed to be reflected in the external asset value. The subsidy can be considered an external cost of production and is therefore deducted from the **external asset** value.

Biomass

Management of wetland habitats can generate surplus biomass, which is costly to remove, but which could be used to produce compost or bioenergy through anaerobic digestion or combustion of briquettes. Pilot projects on the RSPB's Somerset Levels reserves reviewed the viability of the market and tentatively found that there is potential to convert the costs of managing vegetation from approximately £70,000/year to harvest into bioenergy products worth £150,000 wholesale, or over £5 million if converted into biochar and sold retail.

However, the viability of upscaling biomass production for market is dependent on the volume and type of available biomass as well as access to markets and often partnerships. Increasing harvesting of woody biomass could risk adverse carbon impacts, although it would bring biodiversity benefits in undermanaged broadleaf woodlands. We have included the currently limited sales of biomass reported in the RSPB financial accounts, but have not reported the quantities of biomass produced in the physical flow account.

Lessons learned and next steps

This first account for the RSPB's reserves in England is developed as a pilot and the integration of this approach within our existing reporting structures is being explored. In particular, extending the coverage of the RSPB's Natural Capital Account to our estate in the other UK countries is being considered but is dependent on data availability, particularly with respect to SSSI/ASSI (Areas of Special Scientific Interest) data from the relevant statutory agencies.

As has been found by other organisations undertaking similar pilots, the level of effort in preparing the initial Natural Capital Account is far greater than what would be expected to update the account in future years. The reasons for this largely relate to the effort involved in collating data and securing various expertises from across the organisation. Undertaking a Natural Capital Account requires cross-organisational support as frequently the relevant data is held in different departments who may use different databases and undertake updates at different times. Identifying what data are available and for what time periods requires considerable staff time. However, if the data and methods are well-documented, then updates would be expected to require much less time.

The end result of any Natural Capital Account can only ever be as good as the data that support it. This emphasises the importance of good data on the condition of Natural Capital assets, including biodiversity. This includes the data collected, held, and maintained by the relevant statutory agencies. The preparation of Natural Capital Accounts by landowning organisations could also contribute to data that are currently publicly available.

Future work will consider the ability to extend the coverage of the Natural Capital costs and benefits in the account. Some elements, as further explained on page 12, are unlikely to be amenable to robust measurement and valuation even with further work. It should be understood that ethical values sit outside of economics and cannot be valued in the same way. As set out in the approach, their value is better reflected by commitments that society has adopted in international, national, and other targets and laws. Other values, such as flood risk, coastal erosion and education, may be feasibly included with the appropriate level of time, effort, and resource.



Black-headed gull by Andy Hay (rspb-images.com)

Scaling up a Natural Capital approach

A Natural Capital approach presents considerable opportunities for the natural environment. It offers a systemic approach to all tiers of government and organisations whose activities affect the land, water and raw materials upon which we all depend.

Increasingly, Natural Capital thinking is being reflected in strategic public policy in England, including the Clean Growth Strategy and the Interim National Infrastructure Assessment; it is expected to be central to the 25 Year Environment Plan (forthcoming at the time of printing). Combined with a more joined-up and integrated approach, these present major opportunities to enable some of the structural frameworks needed to help achieve the UK Government's commitment to enhancing the natural environment.

But implementing a Natural Capital approach with biodiversity at its heart requires the combination of economic and ethical values. The CNCA framework can do just that when implemented in the way we have done for the RSPB estate in England. This includes the critical feature that the organisation's commitments and responsibilities are clearly defined and supported by fully costed long-term plans. This would enable:

- Public bodies to report the state of their Natural Capital including with respect to their duties and contribution towards national environmental objectives;
- Other stewards of Natural Capital to demonstrate compliance with statutory obligations and contribution towards national environmental objectives, providing accountability of any public investment they choose to be in receipt of.

To scale up and enable CNCA to provide a mechanism for reporting that provides accountability and supports efficient use of public money requires SMART (specific, measurable, accountable, realistic and time-bound) biodiversity targets at the local,

national, and international level. These need to relate to organisational commitments. In the case of public bodies, these are stipulated by legislation, including their duty under Section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to conserving biodiversity as well as their role in delivering Government commitments. An issue that needs to be addressed is that these existing legal duties need to be fully supported and enforced.

Where the enhancement and protection of Natural Capital is not stipulated by regulations, the delivery of public goods must be incentivised by supporting public policy. This may include facilitating the creation of new markets, but will also require financial support for delivering public goods.

Currently, those responsible for Natural Capital, including major landowners, receive significant public subsidy, frequently with little transparency about the public goods that this supports. Post-Brexit reform of agricultural policy offers the greatest opportunity in a generation to achieve the UK's biodiversity targets and to enhance the delivery of other valued services, including clean air and water, a safe and stable climate, and enhanced health and wellbeing.

Asset Register Tables

Table 4. Extent of habitats

Indicator		Baseline year	Reporting year (2016/17)	Trend
Extent of habitats	Area of BAP priority habitats (ha)	Ancient and/or species rich hedgerows	1	◀▶
		Blanket bog	4,534	◀▶
		Coastal and floodplain grazing marsh	7,067	◀▶
		Coastal saltmarsh	4,283	◀▶
		Coastal sand dunes	72	◀▶
		Coastal vegetated shingle	736	◀▶
		Eutrophic standing waters	917	◀▶
		Fens	699	◀▶
		Limestone pavements	2	◀▶
		Lowland calcareous grassland	62	◀▶
		Lowland heathland & lowland dry acid grassland	1,745	◀▶
		Lowland meadows	114	◀▶
		Lowland raised bog	102	◀▶
		Lowland wood pastures and parkland	1	◀▶
		Maritime cliff and slope	11	◀▶
		Mesotrophic lakes	61	◀▶
		Mudflats	12,231	◀▶
		Purple moor grass and rush pastures	52	◀▶
		Reedbeds	810	◀▶
		Saline lagoons	287	◀▶
		Seagrass beds	48	◀▶
		Upland calcareous grassland	29	◀▶
		Upland heath	3,030	◀▶
		Upland mixed ashwoods	29	◀▶
		Upland oakwood	289	◀▶
		Wet woodland	89	◀▶
		Total priority habitat	37,300	◀▶
Total land area holdings (ha)	Owned		24,265	
	Leased		15,549	
	Management agreement		8,469	
	Shooting rights		11,347	
	Total		59,630	
Land under statutory designations (SSSIs, AONB, SAM, NP) %			65	

Table 5. Population trends of priority bird species on 1995 land area

Indicator	Habitat	Species	Mean 1995-99	2016	Trend	Units
Condition	Reedbed	Bittern	8	41	▲	boomers
		Little bittern	0	3	▲	barking males
		Marsh harrier	29	76	▲	nests
		Cetti's warbler	53	460	▲	singing males
		Bearded tit	138	271	▲	pairs
	Lowland wet grassland	Corncrake	0	15	▲	singing males
		Lapwing	668	546	◀▶	pairs
		Snipe	277	282	◀▶	drummers
		Black-tailed godwit	28	42	▲	pairs
		Curlew	15	43	▲	pairs
		Redshank	522	541	◀▶	pairs
	Saltmarsh	Redshank	404	237	▼	pairs
	Other wetlands	Black-necked grebe	<1	2	▲	pairs
		Little egret	0	81	▲	pairs
		Great white egret	0	6	▲	pairs
		Garganey	23	17	▼	pairs
		Shoveler*	338	269	▼	pairs
		Pochard*	156	154	◀▶	pairs
		Spotted crane	7	7	◀▶	singing males
		Crane	0	6	▲	pairs
		Avocet	304	398	▲	pairs
		Ringed plover	80	17	▼	pairs
		Mediterranean gull	12	916	▲	pairs
		Common tern	1493	1754	▲	pairs
		Marine	Gannet	2073	12494	▲
	Kittiwake		?	?	▼	
	Little tern		151	54	▼	pairs
	Sandwich tern		2116	1504	▼	pairs
	Roseate tern		30	104	▲	pairs
	Arctic tern		759	1491	▲	pairs
	Guillemot		?	?	?	
	Razorbill		?	?	?	
	Puffin	?	?	▼		
Upland habitats	Hen harrier	1	1	▼	nests	
	Black grouse	8**	27	▲	lekking males	
	Curlew	?***	?***	▲		
Dry grassland	Stone-curlew	0	7	▲	pairs	

Indicator	Habitat	Species	Mean 1995-99	2016	Trend	Units
	Mixed farmland	Cirl bunting	0	3	▲	pairs
	Lowland heathland	Nightjar	44	33	▼	churring males
		Woodlark	23	41	▲	pairs
		Dartford warbler	105	127	▲	pairs
	Lowland broadleaved woodland	Golden oriole	3	0	▼	pairs

Note: For curlew (in upland habitat), kittiwake and puffin, the overall population trend is based on sample plots and/or monitoring that is not carried out annually. Therefore, while we are confident of their overall population trend, we do not know their total population on RSPB reserves in England during the baseline period or in 2016. An upward arrow means the population has increased by more than 25% above its baseline level, a stable symbol indicates that the population is within 25% of its baseline level, and a downward arrow indicates that the population is more than 25% below its baseline level.

*= Baseline figures for 2005-10

**= Baseline figures for 2002-06

***= Baseline figures for 2003-08

Table 6. Condition of SSSIs

Indicator		2005	2016	Trend	
Condition	Condition of SSSIs (%)	% in favourable condition	47.6	58.1	▲
		% in unfavourable recovering condition	34.7	37.6	▲
		% in unfavourable no change or declining condition	17.5	4.3	▼
		% part destroyed or destroyed condition	0.2	-	▼
	% area of RSPB-managed SSSI land, for which RSPB is responsible for the cause of unfavourable condition	% total SSSI area	3.5	0.0	▼

Table 7. Extent of BAP priority habitats

Indicator	Habitat	When land acquired	2016	Trend	
Extent of habitats on land acquired between 2000 & 2016	Areas of BAP priority habitats (ha)	Blanket bog	1873	1923	◄►
		Coastal & floodplain grazing marsh	1745	4545	▲
		Coastal vegetated shingle	42	42	◄►
		Lowland heathland & lowland dry acid grassland	630	1022	▲
		Lowland calcareous grassland	67	308	▲
		Reedbed	253	345	▲
		Saline lagoons	124	166	▲
		Saltmarsh & mudflat	2401	3028	▲
		Upland heath	2575	2575	◄►

Table 8. Condition of populations of priority bird species on land acquired between 1995-2012

Indicator	Habitat	Species	When land acquired	2016	Trend	Units
Condition of populations of priority bird species on land acquired between 1995-2012	Reedbed	Bittern	3	28	▲	boomers
		Marsh harrier	9	39	▲	nests
		Cetti's warbler	65	317	▲	singing males
		Bearded tit	16	61	▲	pairs
	Lowland wet grassland	Corncrake	0	2	▲	singing males
		Lapwing	392	941	▲	pairs
		Snipe	44	143	▲	drummers
		Curlew	9	5	▼	pairs
		Redshank	168	674	▲	pairs
	Other wetlands	Black-necked grebe	0	9	▲	pairs
		Little egret	7	42	▲	pairs
		Garganey	9	32	▲	pairs
		Shoveler	45	227	▲	pairs
		Pochard	30	155	▲	pairs
		Spotted crane	0	2	▲	singing males
		Crane	0	6	▲	pairs
		Black-winged stilt	0	3	▲	pairs
		Avocet	79	659	▲	pairs
		Ringed plover	29	29	◄	pairs
		Mediterranean gull	0	9	▲	pairs
		Common tern	319	451	▲	pairs
	Marine	Little tern	23	13	▼	pairs
		Sandwich tern	20	3	▼	pairs
		Arctic tern	0	3	▲	pairs
	Dry grassland	Stone-curlew	7	14	▲	pairs
	Mixed farmland	Cirl bunting	7	23	▲	pairs
	Lowland heathland	Nightjar	29	43	▲	singing males
		Woodlark	17	46	▲	pairs
		Dartford warbler	2	12	▲	pairs
		Chough	0	2	▲	pairs



Footnotes

1. The United Nations definition of biodiversity is “The variability among living organisms from all sources, including inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which are a part, this include diversity within species, between species and of ecosystems.”
2. efc, RSPB and PwC (2015) Developing Corporate Natural Capital Accounts, Final Report for the Natural Capital Committee, January 2015.
3. Kering (2014) Kering Environmental Profit & Loss: Methodology and 2013 Group Results.
4. Business and Biodiversity Offsets Programme (BBOP). 2012. Resource Paper: No Net Loss and Loss Gain Calculations in Biodiversity Offsets.
5. Discounting is the process of changing the future values of costs or benefits to enable comparison of costs and benefits that occur in different time periods. It is different to inflation and is based on the principle that people generally prefer to receive goods and services now rather than later (Cabinet Office). A high discount rate severely reduces the future value of something, whereas a low discount rate considers future values to be very similar to current ones (Fisher *et al.*, 2015). The RSPB Natural Capital Account uses the social discount rate (3.5% declining to 3% after 30 years) as detailed in the HM Treasury Green Book (accessed June 2016). Use of the social discount rate to calculate present values, reflects the strategic objectives of balancing social, economic and environmental outcomes. Fisher, B., Naidoo, R. & Ricketts, T. 2015. A field guide to economics for *conservationists*, Colorado, US, Roberts and Company Publishers Inc. Cabinet Office. *Discount rates and net present value* [Online]. Available: data.gov.uk/sib_knowledge_box/discount-rates-and-net-present-value [Accessed 5 October 2017].
6. The ‘Definitive List includes all freehold land and leases and management agreements that grant RSPB reasonable rights of control and/or influence over habitat management and/or species conservation, (unless the terms of the lease or agreement state we do not have the right to call the land an RSPB reserve). Where the RSPB is engaging with the development of a site prior to transfer to the RSPB, and the legal interest is insufficient, it is not formally included in the Definitive List.
7. Reserves have supported an “All Nature” approach for many years. Indeed, over 15,000 species have been recorded on our reserves and we ensure that those of conservation importance are recognised in the management plans of the sites on which they occur. However, because the majority of these species are rare and/or are species for which it is difficult to obtain measures of abundance, their population trends were not used to report against the target to maintain breeding populations.
8. Methods for assessing population trends over time is given in Annex 4. The approach to assessing the condition of populations of species other than birds is summarised in Annex 5.
9. This work has now been completed.
10. Dr Richard Bradbury (Head of Environmental Research, RSPB) and Dr Malcolm Ausden (Principal Ecologist, RSPB).
11. Including schools and children in families.
12. Our estimates reflect best available knowledge, but due to the variation of estimates available in the literature, these estimates should be seen as preliminary values (see detail in Annex 7).
13. Henley Centre (2005) Health and outdoor recreation. University of Reading, Report to Natural England, Henley Centre.
14. Bragg R. and Atkins G. (2016) A review of nature based interventions for mental health care. Natural England Commissioned reports, Number 204.
15. Bratman G. N, daily G. C, Levy B. J. & Gross J. (2015). The benefits of nature experience: Improved affect and cognition. *Landscape and Urban Planning* 138, 41-50.
16. Lovell R. (2016) Links between natural environments and physical activity: evidence briefing (EIN019) Natural England.
17. www.gov.uk/government/publications/wellbeing-and-civil-society-estimating-the-value-of-volunteering-using-subjective-wellbeing-data-wp112
18. RSPB (2010) Every Child Outdoors.
19. Including schools and children in families.
20. An active first-hand experience of nature (a physical interaction with the living environment) for no less than 30 minutes, where they learn something and have fun.

[rspb.org.uk](https://www.rspb.org.uk)

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