

Indicator name			Version
NB22a Peatland restoration area			290316
Indicator type:	Risk/opportunity	Impact	Action
			X
SCCAP Theme	SCCAP Objective	CCRA risk/opportunity	
Natural Environment	N2: Support a healthy and diverse natural environment with capacity to adapt	Cross-cutting	

### At a glance

- Peatlands are priority habitats under the EU Habitats Directive, as well as being critical carbon stores.
- More extensive areas of peatland, in better condition, are more likely to be able to cope with climate change than small fragmented areas.
- The Scottish Government has placed a great emphasis on the importance of restoring peat-forming habitats which have been drained or damaged.

### Latest Figure

Peatland area restored up to 2012: 30.9 kha  
(Chapman et al., 2013)

### Trend

1.4 kha a<sup>-1</sup> restored (1990-2012)  
(Chapman et al., 2013)

### Why is this indicator important?

Peatlands<sup>1</sup> are important for their unique biodiversity (Scotland is host to probably the largest single expanse of blanket bog in the world – the Flow Country), for their contribution to water quality (important both for some potable water supplies and for freshwater fisheries), for their contribution to flood control and mitigation, for their preservation of archaeological and environmental records, for the provision of the wilderness experience (important in tourism) and as a limited habitat for deer and grouse (important in the field sport industry) (Bain et al., 2011).

Deep peat (soils having an organic layer >50 cm deep) represents a very significant carbon store, estimated at 1620 Mt C and 56% of the total soil C stock in Scotland (Chapman et al., 2009). Even small changes in this carbon store, say a 1% loss, become comparable to other major carbon fluxes.

<sup>1</sup> 'Peatland' will include both bog and fen. Other significant parts of wetland within Scotland are marsh and swamp. However, we have no access to any data on the restoration of marsh and swamp but it is likely that the areas involved will be relatively small.

Many areas are in poor condition and, instead of sequestering carbon, are losing carbon.

Restoration can reverse this situation or, at least, can prevent further losses (Bain et al., 2011). This indicator currently examines data on known restoration areas from 1990-2012.

**Related indicators:**

NB11 Extent of key habitats: deep peat

NB13 Condition of key habitats: Area of modified deep peat soils

NB18 Annual greenhouse gas (GHG) emissions from degraded peatlands

### What is happening now?

With the implementation of Peatland Action (originally the Green Stimulus Package), administered by SNH, the rate of restoration has increased (Table 1).

The total number of sites within Peatland Action is 105 (Coupar, 2014) compared to the total for 1990-2012 of 47 sites (Figure 1). The actual area restored may be greater than this with input from other funding streams, including private investment. The area of these latest projects is not currently included in the indicator data.

**Table 1** Funding from Scottish Government to the Peatland Action (SNH) (Coupar, 2014) and approximate areas that this would restore based on average cost per ha (Chapman et al., 2013)

Year	Peatland Action funding	Approx. area of restoration (ha)
2012/13	£200K	230
2013/14	£500K	570
2014/15	£5,000K	5700

### What has happened in the past?

Data on restoration – location, intervention and area involved – has been collated (as far as possible) going back to 1990 (the baseline year for IPPC accounting; Chapman et al., 2013). There will have been projects before then, particularly focussing on raised bogs in poor condition but near to population centres where local interest has sponsored conservation and improvement. However, we are not aware that these have been summarised in any detail. Restoration was very slow over the first decade from 1990 but then accelerated with the increased efforts from 2001 onwards, particularly with EU LIFE funding.

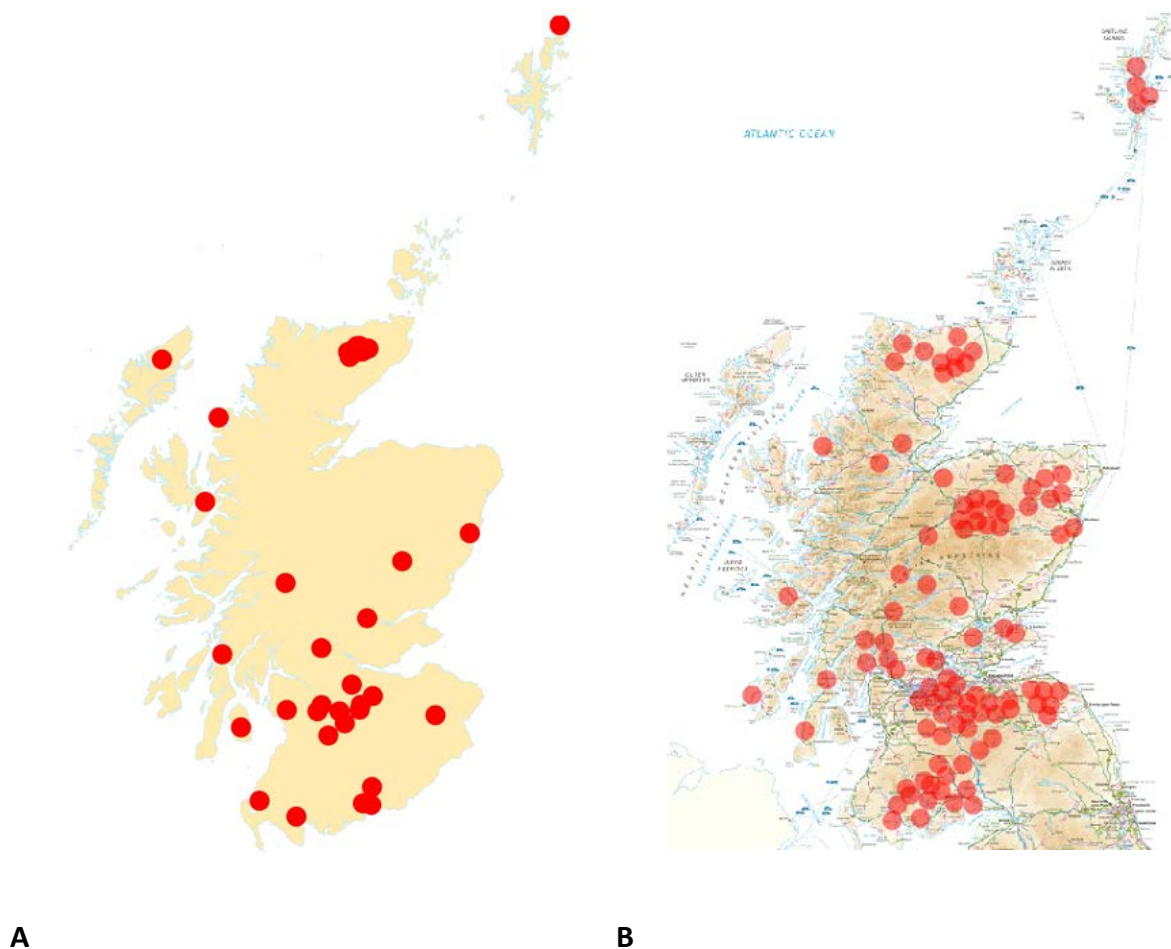
### What is projected to happen in the future?

The Scottish Government has placed a great emphasis on the importance of restoring peat-forming habitats which have been drained or damaged. Further funding has been set aside for peatland restoration, e.g. £10M of SRDP funding has been ring-fenced for this (Coupar, 2014), as well as £4M of Heritage Lottery Funding and further EU-LIFE support. A target of 10,000 ha restored by 2015 has been set (SNH, 2014) while the Scottish Government is aiming for ‘accelerated restoration’ of up to 21,000 ha a<sup>-1</sup> (Scottish Government, 2013).

## Patterns of change

A significant proportion (22,520 ha) of the area restored so far was only subjected to grazing management. During the assessment period currently covered by the indicator, there were no specific cases of bare peat restoration or of any conversions from cultivated peat with only one project particularly targeting eroded peat (Chapman et al. 2013).

Restoration effort has increased considerably in the past two years with a more than doubling of the number of restoration sites. These have extended over the country with particular new investment in Dumfries and Galloway, the Lothians and Stirling, North-East Scotland and the Cairngorms (Figure 1).



**Figure 1** Location of restoration sites: A 1990-2012 (Chapman, pers. comm.); B 2012-2014 (Coupar, 2014).

## Interpretation of indicator trends

The recent trend of 1.4 kha a<sup>-1</sup> restored has rapidly increased and the current figure is really unknown. Once data collation has caught up, it is likely to be in the region of 3 to 6 kha a<sup>-1</sup>.

## Limitations

A critical limitation is that not all restoration efforts since 1990 have been recorded. Hence the cited area restored is a minimum figure with other areas of restoration outwith the public sector being largely unrepresented in the numbers.

Secondly, there is some ambiguity in the term 'restoration' which may include anything from intensive peat reprofiling, gully blocking and vegetation reseeding, to just the reduction of grazing pressure or cessation of muirburn. Similarly the areas involved may be quite different, as too the costs involved.

Thirdly, the area of restoration may refer to the whole of a particular peatland entity but the actual area benefitting may only be a proportion of the whole. Hence grip<sup>2</sup> blocking may only benefit the immediate locality of the former grips, the removal of trees from afforested areas will have less influence on former forest rides<sup>3</sup>, and the re-vegetation of eroded areas will only benefit the bare peat and not the rest of the site, depending on the proportion eroded.

## References

Bain, C.G., Bonn, A., Stoneman, R., Chapman, S., Coupar, A., Evans, M., Gearey, B., Howat, M., Joosten, H., Keenleyside, C., Labadz, J., Lindsay, R., Littlewood, N., Lunt, P., Miller, C., Moxey, A., Orr, H., Reed, M., Smith, P., Swales, V., Thompson, D.B.A., Thompson, P.S., Van de Noort, R., Wilson, J.D., Worrall, F. (2011) *IUCN UK Commission of Inquiry on Peatlands*. Edinburgh, IUCN UK Peatland Programme. Available online at: <http://www.iucn-uk-peatlandprogramme.org>

Chapman, S.J., Bell, J., Donnelly, D. & Lilly, A., (2009) Carbon stocks in Scottish peatlands. *Soil Use and Management* 25, 105-112.

Chapman, S., Thomson, K. & Matthews, R. (2013) *AFOLU accounting: implication for implementing peatland restoration - costs and benefits*. ClimateXChange enquiry number 1208-01. Edinburgh, ClimateXChange.

Coupar A. (2014) *Progress on UK Peatland Action from country levels*. Presentation given at 'Peatland Action: Learning from Success Conference 2014', IUCN, Inverness. Available online at: [http://iucn-uk-peatlandprogramme.org/sites/all/files/ProgressonPeatlandAction\\_ACoupar.pdf](http://iucn-uk-peatlandprogramme.org/sites/all/files/ProgressonPeatlandAction_ACoupar.pdf)

Scottish Government (2013) *Second Report on Proposals and Policies*. <http://www.scotland.gov.uk/Publications/2013/06/6387>

SNH (2014) *Scotland's National Peatland Plan: working for our future. A consultation paper*. Available online at: <http://www.snh.gov.uk/docs/A1306595.pdf>

<sup>2</sup> A grip is a moorland drainage ditch

<sup>3</sup> A ride is a linear open space within a wood derived from the need for access

## Further information

Case study: Lowland raised bog at Blawhorn Moss National Nature Reserve, Central Scotland  
<https://weadapt.org/placemarks/maps/view/920>

Lindsay, R. (2010) *Peatlands and carbon: A critical synthesis*. RSPB Scotland.  
[http://www.rspb.org.uk/Images/Peatbogs\\_and\\_carbon\\_tcm9-255200.pdf](http://www.rspb.org.uk/Images/Peatbogs_and_carbon_tcm9-255200.pdf)

Peatland Action:

<http://www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/>

National Peatland Plan:

<http://www.snh.gov.uk/docs/A1306595.pdf>

## Acknowledgements

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Scottish Natural Heritage

## Appendix One: Indicator metadata and methodology

**Table 1: Indicator metadata**

	Metadata
<b>Title of the indicator</b>	Peatland restoration area
<b>Indicator contact:</b> Organisation or individual/s responsible for the indicator	Anna Moss (CXC/ University of Dundee)
<b>Indicator data source</b>	(Chapman et al., 2013)
<b>Data link:</b> URL for retrieving the indicator primary indicator data.	<a href="http://www.climatexchange.org.uk/files/7313/8356/6022/AFOLU_accounting_implication_for_peatland_final_-_costs_and_benefits.pdf">http://www.climatexchange.org.uk/files/7313/8356/6022/AFOLU_accounting_implication_for_peatland_final_-_costs_and_benefits.pdf</a>

**Table 2: Indicator data**

	Indicator data
<b>Temporal coverage:</b> Start and end dates, identifying any significant data gaps.	Data extends from 1990 to the present.
<b>Frequency of updates:</b> Planned or potential updates	We anticipate greater accuracy of reporting as future projects are accounted for against set targets.
<b>Spatial coverage:</b> Maximum area for which data is available	Scotland
<b>Uncertainties:</b> Uncertainty issues arising from e.g. data collection, aggregation of data, data gaps	Some definitions as to the 'area of restoration' as well as what constitutes actual 'restoration' may need to be ratified.
<b>Spatial resolution:</b> Scale/unit for which data is collected	Usually areas are to nearest 1 ha or 0.1 ha.
<b>Categorical resolution:</b> Potential for disaggregation of data into categories	Disaggregation into blanket vs valley bog should be possible.
<b>Data accessibility:</b> Restrictions on usage, relevant terms & conditions	Publicly available, free of charge

**Table 3 Contributing data sources**

Contributing data sources
Data sets used to create the indicator data, the organisation responsible for them and any URLs which

provide access to the data.

None

#### **Table 4 Indicator methodology**

##### **Indicator methodology**

The methodology used to create the indicator data

Some initial but limited information was found within the Peat Compendium (<http://www.peatlands.org.uk/>). Restoration extent was determined by interrogating known national representatives within SNH, FCS, RSPB or other individuals known to be involved in peatland restoration and further contacts obtained from these.