IUCN UK Committee Peatland Programme
*Briefing Note N°**5***

Domestic peat extraction

IUCN National Committee United Kingdom
Peatland Programme

History of peat extraction

Main source of fuel

Peat has been used as a fuel and for heating for thousands of years. More than 2,000 years ago the Roman chronicler Pliny described the cutting of 'soil' for fuel by communities who lived on the north-western fringes of the Roman Empire. Islands such as the Shetlands, where there has never been a substantial woodland cover at any time since the last Ice Age, have much archaeological evidence for Neolithic, Bronze Age and Iron Age cultures in the form of chambered cairns, burnt mounds and fortified villages. These apparently thriving societies most probably used peat as their main source of fuel and heating in the absence of any other widespread alternative.

Traditional methods

Such domestic cutting of peat is traditionally carried out on individual peat 'banks' which take the form of a cut peat face, often no more than 10 or 20m long, though sometimes extending for as much as 100m. The peat is cut using a special spade which has many different local names and designs, and each face is as tall as either one or two cuts from this spade (*left*). Each year the face retreats further across the peat bog as a thickness of approximately 10 cm is removed from the peat face in the form of individual 'turves' or 'peats'. These are allowed to air-dry, heaped up for collection (above), and then gathered to form a peat stack which represents the annual fuel supply. Such stacks are therefore normally located close to the dwelling.

Peat rights

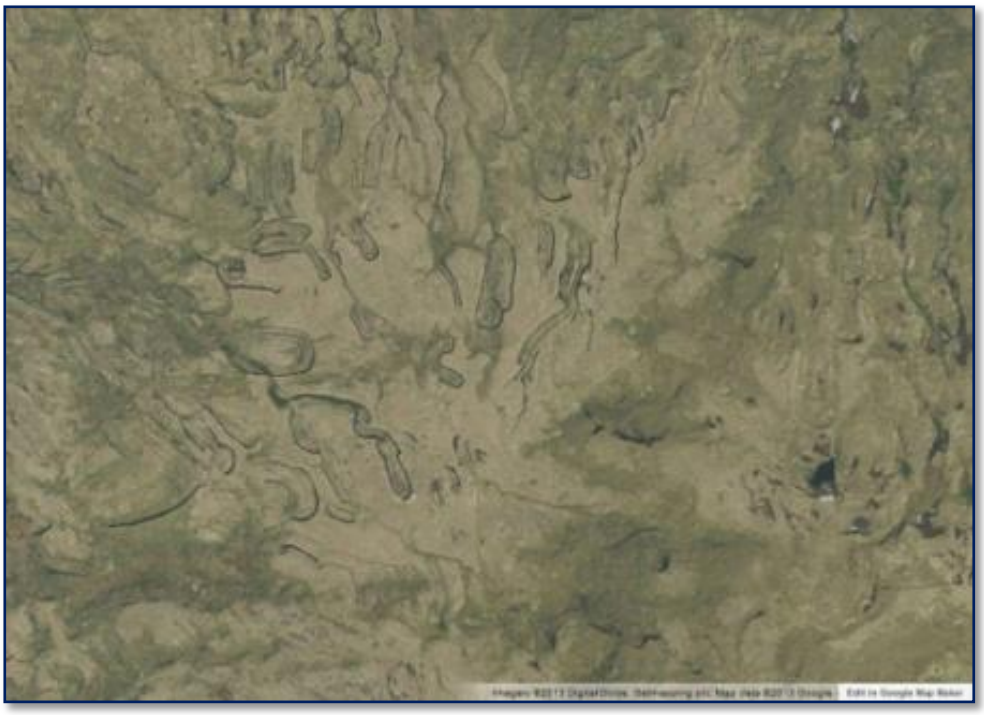
There are often rights or social agreements about the location of individual peat banks within a community, and if a particular bank is considered to have been 'worked out' (*right*) or become unsuitable because of the nature of the peat, arrangements are normally in place to agree or permit the opening of a new bank.

Peat banks may be in remote loctions distant from habitation

Peat roads

Although for ease of use the peat stack is generally stored close to the dwelling place and the bank from which the turves are obtained may be located nearby, the bank may sometimes lie a very considerable distance from the dwelling. In the case of blanket bog (see ***Definitions Briefing Note 1***) some of the deepest peat deposits develop across broad watershed ridges which may represent the highest landscape features furthest from human habitation. Even within living memory,

these distant peat banks were visited using well-established 'peat roads' or 'peat tracks' and the turves were transported home using ponies, cattle or simply carried in creels or baskets. It is therefore important to appreciate that domestic peat cutting can be a significant feature even in the remotest parts of a landscape (*below*).



Source: Google maps, Data provider: Google

The other key feature of domestic peat cutting is that it generally requires a peat face from which to cut the turves. Any attempt to cut a peat face into the flattest, wettest central parts of a typical bog system would face many challenges, particularly as the microtopography of such areas may include wet hollows and pools (see **Biodiversity Briefing Note 2**). Consequently peat banks have often been positioned on slopes, thus ensuring that the bog surface has a simpler structure and that the ground below the face lies at a lower level than the face itself. Such slopes with simple microtopographic structure tend to occur towards the margins of distinct bog units (*mesotopes* – see ***Definitions Briefing Note 1***). Thus the areas where evidence for domestic peat cutting can most readily be found tends to be close to habitation on the edges of valleyside mesotopes, or on gently-sloping peat-covered hill-slopes, or on the sloping margins of watershed bog mesotopes. (see ***Definitions Briefing Note 1***).

One rather short-lived technological innovation in the 1980s and 1990s appeared to dispense with this need cutting the peat rapidly and extruding it as 'peat sausages' (right) through mechanical means, which allowed peat to be extracted faster and on a greater scale than hand cutting alone. Other mechanical methods employ JCBs or HiMACS.

Impacts of peat extraction

The rate of peat extraction outstrips the rate at which peat is deposited. Peat typically accumulates at approximately 0.5 - 1mm per year which means a 1 metre depth of peat can take 1,000 years to form (see ***Definitions Briefing Note 1***). Cutting by hand involves the removal of the acrotelm (see ***Biodiversity Briefing Note 2***) with its actively growing vegetation, but this vegetated layer is often placed down onto the lowered surface of the bog at the foot of the peat bank. Consequently an individual domestic peat bank may appear to have a relatively low impact on the peatland ecosystem, but while individually this may the case, the **collective impacts over an extended period of time** (left) can be considerable, even dramatic.

Collective impact

Loss of marginal lagg fen

Thus, in the lowlands, **not one single raised bog still possesses the wet *lagg fen* margin** that represents the natural transition zone between deep-peat habitat and mineral ground, and which is fundamental to maintaining the overall water table of a raised bog. In the majority of cases this loss of this natural bog margin has been caused by domestic peat cutting which has nibbled away the fundamentally-important edge of the bog. Even these **apparently small losses of peat can have a major impact** because the cut peat face acts like a one-sided drain (see ***Drainage Briefing Note 3***).

Small loss but major impact

An increased heather abundance on a bog is sometimes misunderstood as a sign of a healthy bog, while in fact it is the opposite, a sign that the bog is drying out Heather is not generally a significant peat-forming species and its presence in abundance is associated with degradation of the carbon store. Indeed dense stands on deep peat can be used as an indicator of damage, on lowland raised bogs often as a result of drainage caused by marginal domestic peat cutting. In some cases, domestic cutting has been so extensive that almost the entire dome of the raised bog has been cut way to leave just a small upstanding block of increasingly dry raised bog peat dominated by heather and invading birch or pine woodland.

Heather as an indicator

In **blanket bog** landscapes, **extensive areas of peat have been dug for domestic use** in the bogland areas around townships, but what is not often recognised is that significant areas have also been cut far away from such townships, up on the margins of deep peat deposits in the uplands. Such areas have supplied fuel and heating to communities for centuries or even millennia, and some of these cuttings may even **date back to Neolithic or Bronze Age times**. The effect over time may thus have been considerable, particularly where peat cutting was undertaken on the margins of deep peat deposits straddling watersheds or spurs, because the margins of such areas can be as sensitive to drainage as the margins of lowland raised bogs. **Peat banks which cut into the edge of deep, wet peat systems can initiate erosion** which is then capable of spreading across the whole bog system. Such impacts have until now gone largely un-noticed and un-recorded.

Impacts on blanket bogs

Initiate erosion

Domestic peat extraction causes carbon losses mainly through bulk removal and oxidative loss, although carbon losses from DOC and POC will also occur to a lesser extent. Extraction may cause localised loss of active bog vegetation which, combined with the physical disruption to the hydrology caused by removal of the peat, can lead to a reduction in bog ecosystem function (see ***Drainage and Biodiversity Briefing Notes 2 & 3***). **Peat cutting has also been shown to increase the risk of peat mass movements** such as bog slides because the peat bank constitutes a break in the fibrous vegetation mat which

Increased risk of mass movement

Mechanised cutting has not proved successful	binds the bog system securely on a slope. Drainage offers the potential for cracks to develop in the peat, thus permitting heavy rainfall to reach and lubricate the junction between the peat and the mineral sub-soil. The peat archive is also a substantial and irreplaceable archaeological record. The extracted peat represents an absolute loss of part of this record which cannot be replaced. Attempts have been made to mechanise domestic peat cutting, most notably using the Difco extrusion system (*see Page 2*). These have led not only to more dramatic damage to the bog system, but have also proved to have their own set of practical problems. In general, mechanised cutting has more serious impacts on the ecology and functioning of a peat bog than does hand cutting.
Areas at risk	All UK raised and blanket bogs, especially areas on which individuals have the right to cut peat and any surrounding hydrologically-connected areas.
Other benefits from addressing this issue	Large carbon losses from domestic peat cutting are inevitable. Sensitive positioning of peat banks and instigation of good restoration techniques can reduce, although not avoid, the impacts described above.
Gaps in Knowledge	Identified gaps: • A clear picture is needed of the extent to which domestic peat cutting has had a significant impact on the UK peat bog resource, addressing in particular the extent of old, even prehistoric, cutting. Amongst other things, this information could be used to identify areas at risk from slope failure and peat slides as a result of cutting. • By addressing the question of extent and age of cutting, it would also be possible to estimate the recovery rate displayed by domestic cuttings both in terms of their vegetation and rate of carbon sequestration. • Research focusing on knowledge gaps such as the level of carbon losses from peat banks and how best to restore a vertical peat bank face will provide better understanding and guide practical actions.
Practical Actions	Practical actions: • Encourage the uptake of best practice for the sensitive positioning of new peat banks, and establish restoration plans for abandoned peat banks. • Encourage appropriate restoration of spent peat banks to prevent long-term negative impacts.
More Information	Underpinning scientific report: http://www.rspb.org.uk/Images/Peatbogs_and_carbon_tcm9-255200.pdf (low resolution) http://www.uel.ac.uk/erg/PeatandCarbonReport.htm (high resolution : downloadable in sections) IUCN UK Peatland Programme: http://www.iucn-uk-peatlandprogramme.org/ Natural England Uplands Evidence Review: http://www.naturalengland.org.uk/ourwork/uplands/uplandsevidencereviewfeature.aspx Scottish Natural Heritage Report on peat definitions: http://www.snh.org.uk/pdfs/publications/commissioned_reports/701.pdf

Peatland Action:
http://www.snh.gov.uk/climate-change/what-snh-is-doing/peatland-action/

This briefing note is part of a series aimed at policy makers, practitioners and academics to help explain the ecological processes that underpin peatland function. Understanding the ecology of peatlands is essential when investigating the impacts of human activity on peatlands, interpreting research findings and planning the recovery of damaged peatlands.

These briefs have been produced following a major process of review and comment building on an original document: Lindsay, R. 2010 'Peatbogs and Carbon: a Critical Synthesis' University of East London. published by RSPB, Sandy. http://www.rspb.org.uk/Images/Peatbogs_and_carbon_tcm9-255200.pdf, this report also being available at high resolution and in sections from: http://www.uel.ac.uk/erg/PeatandCarbonReport.htm

The full set of briefs can be downloaded from:www.iucn-uk-peatlandprogramme.org.uk

The International Union for the Conservation of Nature (IUCN) is a global organisation, providing an influential and authoritative voice for nature conservation. The IUCN UK Peatland Programme promotes peatland restoration in the UK and advocates the multiple benefits of peatlands through partnerships, strong science, sound policy and effective practice.

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