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Oral Presentation

Facts, figures and fallacy – half truths driving the phasing out of peat use in horticulture in England

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SUMMARY

The UK Government has adopted a policy to stop the use of peat in England in the garden and hobby market by 2020 and the commercial horticulture sector by 2030. The rationale is based on biodiversity loss, CO₂ emissions, damage to heritage and historical artefacts and destruction of scientific information. Most of the damage to England's lowland raised bogs, however, has occurred over centuries through conversion to agriculture and forestry, use of peat for cattle and horse bedding and domestic fuel. Peat extraction for horticulture commenced on a commercial scale only in the 1960s and its effect has been small compared to other uses. Of the 680,000 hectares of peat in England only 920 ha (0.14%) is currently subject to peat extraction and this is declining under Government pressure and planning restrictions. 99% of England's raised bogs are degraded and emitting the equivalent of 3 million tonnes of CO₂ a year while the peat extracted in England for horticulture is responsible for less than 200,000 t CO_{2e} (7%) and is only 0.04% of total annual UK greenhouse gas emissions. This information is discussed in the context of the UK Government's Task Force to 'build a resilient and sustainable horticultural industry'.

INTRODUCTION

In Britain a consortium of 14 of the leading UK's main wildlife and archaeological conservation organisations launched the Peatlands Campaign in 1990 to emphasise the damage caused by peat based industries and promote the use of alternatives in growing media (Lindsay, 1988). This rapidly developed into a wider message to ban the use of peat, remove the threat to vulnerable habitats and replace peat with alternative growing media substrates (Alexander et al., 2008). A hard-hitting and focused publicity campaign, linked with some direct action from more militant NGOs, raised public awareness and created the perception that all uses of peat were bad and, that by stopping peat extraction in the UK, habitats and their biodiversity would be protected and their carbon stores maintained.

This campaign quite rightly highlighted the importance of lowland raised bogs in the UK and the fact that these are the source of some of the peat used in the UK for horticulture. The campaign, however, did not present a balanced picture of the current status of lowland raised bogs in terms of wildlife conservation value or the main reasons for 99% being degraded (Lindsay & Immirzi, 1988). Lowland peatlands and associated fenlands and wetlands have been drained and cut away since Roman times, initially to provide land for agriculture and fuel for domestic use. This 'reclamation' increased from the 17th Century onwards with the development of more effective land drainage technology under the direction of Dutch engineers such as Vermuyden (Rotherham, 2010). Bogs that remained continued to be cut for fuel but also bedding for domestic animals, especially horses, in cities distant from the source

of peat. After World War I many of the remaining raised bogs were drained and planted with conifers to become part of the Forestry Commission estate.

Commercial peat extraction for horticulture only started in the 1960s when there was a major increase in the use of growing media to satisfy the demand for containerised plants (Alexander et al., 2008). Planning consents covering an area totalling 4,250 ha (James Hayes, *pers. comm.*) were obtained by 1995 under planning legislation dating from the 1940s and predated subsequent legislation establishing National Nature Reserves (National Parks and Access to the Countryside Act 1949) and SSSIs (Wildlife and Countryside Act 1981). Peat is regarded as a mineral that can be extracted under planning legislation but natural peat bog habitat and its biodiversity is an important wildlife resource that qualifies for protection under UK wildlife legislation and the EU Habitat Directive. Since the passing of the Wildlife and Countryside Act 1981, many UK lowland raised bogs, including those that already had planning consent for peat extraction, have been designated SSSIs on the basis that some part of them contained active peat-forming vegetation. This new status was used by conservation organisations to campaign against continued peat extraction on some sites and to prevent the commencement of extraction on others.

The conservation campaign was reinforced following the endorsement by the UK Government of the EU Habitats Directive (European Commission, 1992) when several important peat extraction sites were designated as Special Areas of Conservation (SAC) to become part of the EU-wide Natura 2000 series of Europe's most valuable and threatened species and habitats (JNCC, 2008). Lowland raised bogs can be designated SACs in one of two categories: (1) active raised bogs (currently peat forming) and (2) degraded raised bogs capable of becoming peat forming again within 30 years. The latter status has been used to put pressure on peat extractors in England to cease operations and sell their planning consents to the Government in exchange for large amounts of compensation for projected loss of future profits. In 2001, for example, the UK Government paid the Scotts Company £17.3 million in exchange for the planning consents they held for Thorne and Hatfield Moors in South Yorkshire and Wedholme Flow in Cumbria.

The UK Government has never passed legislation to ban the extraction of peat or its use in horticulture but, under NGO pressure, this was embedded in the UK Biodiversity Action Plan for raised bog that set a target for the horticulture industry to be 90% peat free by 2010 (UK Biodiversity Action Plan, 1999). This target was not met and, following the publication of the Natural Environment White Paper (2011), the UK Department of Food and Rural Affairs (DEFRA) adopted a policy to phase out the use of peat in the amateur (gardening) market by 2020 and the commercial grower sector by 2030. The horticulture production industry in the UK currently employs around 95,000 people in 7,700 businesses that generate £3 billion a year for the economy (LANTRA, 2012).

AREA OF PEATLAND IN THE UK

There is considerable confusion and disagreement on the areas of peatland and organic soils in the UK largely because the definition of peat and methods used to determine the area of the resource differ between England, Scotland, Wales and Northern Ireland (Lindsay & Immirzi, 1996; Lindsay, 2010; JNCC, 2011). The most recent information published by the Joint Nature Conservation Committee (JNCC, 2011) estimates the total area of bogs and fens in the UK to be 2,303,300 ha, which is much more than the earlier estimate of 1,581,841 ha (Robertson & Jowsey, 1968). In his review of 'Peat Bogs and Carbon', Lindsay (2010) provides an area range from 1,472,700 ha (Immirzi et al., 1992) to 5,042,700 (Burton, 1996

Shier, 1996). The former is based on peat probably at least one metre thick and the latter contains shallower peaty soils.

The area of peatland in England is equally confusing and the latest estimates are provided in Table 1. The largest area of deep peat is blanket bog while raised bog is only 5%. In addition to deep peats there is an additional 5,272 ha of shallow peaty soils with an organic surface layer less than 30 cm thick.

Table 1: Carbon store in and CO₂ emissions from peat in England (based on EN, 2010)

Peatland type	Area (km ²)	Carbon store (MtC)	% carbon store
Blanket bog and upland valley mire	3,553	138.0	23
Raised bog	357	57.5	10
Lowland fen (deep)	958	144.0	25
Lowland fen (wasted)	1,922	186.4	32
No data	9		
Sub total	6,799	525.9	90
Shallow peaty soils	5,272	58.5	10
Total	12,071	584.4	100

POLICY TO PHASE OUT PEAT USE IN HORTICULTURE IN ENGLAND

Nature conservation and planning policies for peat extraction are both responsibilities that have been devolved to the country administrations in Scotland, Wales and Northern Ireland and the UK Government remit over these extends only to England. In December 2010 DEFRA launched a ‘*Consultation on Reducing the Horticultural Use of Peat in England*’ (DEFRA, 2010) with a view to phasing out the use of peat in horticulture in England in the amateur market by 2020 and in the commercial growing sector by 2030. In addition to individual and group responses two stakeholder workshops were held and the process ended on 11th March 2011. DEFRA published a ‘*Summary of Responses to the Consultation*’ (DEFRA, 2011) that reported there had been 258 responses 88 of which were campaign responses and 170 unique responses. Respondents included trade associations, retailers, professional growers, growing media manufacturers, local authorities, environmental groups and members of the public. The consultation document posed a number of questions the most important of which was ‘*Do you support the rationale for taking action to reduce the horticultural use of peat?*’.

According to DEFRA the majority of respondents supported phasing out the use of peat although information on how many these were and of which category of respondent was not provided. A minority of respondents rejected the rationale because either they were not convinced by the arguments presented by DEFRA or they did not agree that the impact of peat use was significant enough to warrant stopping it. Subsequent questions were only relevant if the rationale was accepted and were concerned with voluntary versus legislative approaches to the process of phasing out the use of peat; should the use of peat be phased out in all markets and for all species and growing media products? There were specific questions on the three main horticulture sectors identified: (1) Government and public sector, (2) amateur gardening sector and (3) professional grower sector. There were also questions on building consumer awareness, improving labelling and adopting standards for growing media and on whether a ‘*time-limited industry working group should be established to develop a*

“roadmap” to a peat-free future in professional horticulture’. Most of the respondents who rejected the rationale in Question 1 are unlikely to have answered any of the other questions and therefore the majority in favour described by DEFRA is of a much smaller number than the original 170. In this respect the consultation exercise was loaded in favour of phasing out peat and it was not explained in the documentation that the decision to proceed was to be based on a simple majority of a few respondents many of whom were from anti-peat use campaigning organisations.

The Natural Environment White Paper: The Natural Choice – Securing the Value of Nature was also published in June 2011 and within its 80 pages the only firm time-related commitment it contains are to phase out the use of peat in horticulture in England. All other objectives and commitments are aspirations and strategies. It is evident that the White Paper was drafted before the consultation on the use of peat in horticulture was concluded. The White Paper mentions establishment of a *‘Task Force’ of ‘representatives across the supply chain to advise on how best to overcome the barriers to reducing peat use, exploring all the available measures to achieve this goal’*. This is the *‘sting in the tail’* since a progress review in 2015 will *‘consider the potential for alternative policy measures if necessary’*, namely legislation.

THE DEFRA RATIONALE FOR PHASING OUT THE USE OF PEAT

Peatland habitats and Biodiversity

The DEFRA consultation document points out that the area of pristine (i.e. peat forming) raised bog habitat remaining in England is less than 1% of the total area. This is linked to an unreferenced statement *that ‘some 16% of raised bogs have been affected by recent peat extraction for horticulture and gardening and another 5% or more have been affected by older peat extraction’*. This is a misrepresentation of the facts because most of the lowland raised bogs in England have been cut for domestic fuel since Roman times, drained for agriculture mostly since the 17th Century and, subsequently, much peat was removed and used as bedding for domestic animals, especially horses until after World War I. Commercial peat extraction for horticulture began only in the 1960s by which time most raised bogs were already degraded. This extraction currently takes place on less than 500 hectares in England (1.4% of raised bogs; 0.07% of all deep peatlands). It is important to recognise that all remaining pristine raised bogs in England are already Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC) or other conservation designation. On peat extraction sites that are SSSIs or SACs, designation was made after planning consent was given and in many cases after peat extraction had commenced. These are now regarded as cutover peatlands with the potential for restoration to become active bogs (i.e. peat-forming) within 30 years of designation.

DEFRA emphasises the scarcity and value of the remaining raised bogs (1%) and that the *‘impact of on-going extraction is significant. Rare insects, unusual plants and important bird species are at home on these bogs’*. This is a strange statement considering peat extraction does not take place on pristine bogs! None of the plants and birds that DEFRA mentions is threatened and neither are they only characteristic of pristine raised bog (Table 2). Since the raised bogs that are being used for peat extraction do not include pristine sites, are degraded and make up only 1.4% of the raised bogs in England, the impact on biodiversity is minimal and it is misleading to claim that *‘this valuable biodiversity is recognised by a requirement in the EU Habitats Directive to protect good quality sites and restore degraded sites’*. As mentioned above good quality sites are already protected in England and degraded raised

bogs may never become peat forming again. DEFRA is confusing two issues, the importance of and necessity to protect pristine raised bogs and the notion that peat extraction is bad for biodiversity when, in fact, biodiversity can be enhanced as a result of rewetting after extraction ceases.

Inspection of the UK Biodiversity Action Plan (1999) for lowland raised bogs reveals, perhaps surprisingly, that none of those with planning consents for peat extraction in England contain threatened plants and the only animals listed are nightjar (*Caprimulgus europaeus*), great heath butterfly (*Coenonympha tullia*), bog bush cricket (*Metrioptera brachyptera*) and mire pill beetle (*Curimopsis nigrata*) (Table 2). The first of these animals is a heathland bird whose presence in raised bogs has increased following their drying out; the butterfly is known to inhabit wet bogs and will benefit from rewetting following extraction and the cricket is also a species of dry open heathland and gaps in woody heath while the pill beetle occurs at only three locations on cutover bog in South Yorkshire. It is clear that inappropriate conservation management may lead to loss of the heathland or bare peat habitats of these, and probably other, important species.

Table 2: Lowland raised bog UK Biodiversity Action Plan species

Species	Habitat	Location/distribution
<i>Sphagnum balticum</i>	Wet bogs with <i>S. cuspidatum</i>	Rare and scattered in NE Britain. In England only occurs on one site in Northumberland
<i>S. skyense</i>	Heathland	Only in one location in Skye
<i>S. pulchrum</i>	Pools and hollows in raised and valley bogs	Rare in England apart from Dorset heaths
<i>S. imbricatum</i>	Wet bogs and sphagnum lawn	Rare in England, only in NW
<i>Coenonympha tullia</i> (large heath butterfly)	Bogs and wet heath	Occurs on a few raised bog NNRs
<i>Metrioptera brachyptera</i> (bog bush cricket)	Dry heaths and grassland	Localised in England
<i>Curimopsis nigrata</i> (mire pill beetle)	Bare peat and cutover bog	Only known from 3 locations on one site in Lincolnshire
<i>Caprimulgus europaeus</i> (nightjar)	Heaths and dry grassland	Throughout most of England

Carbon and Climate Change

DEFRA quite correctly points out that ‘lowland raised bogs in England are concentrated stores of carbon, estimated to contain 57.5 million tonnes’. They claim this is equivalent to around 40% of the UK’s total annual emissions if it were all released at once but that is a ridiculous comparison since it would never happen. In the account of ‘England’s Peatlands’: Carbon Storage and Greenhouse Gases (NE, 2010) the estimated total carbon stored in the deep and shallow peaty soils in England is 594.4 Mt or nearly five times England’s total CO₂ emissions. Defra goes on to stress that peat in the UK is a non-renewable resource owing to the slow rate of formation of new peat and the fact that 99% of the resource is degraded. This may be strictly true but it is relatively unimportant when the large emission taking place from degraded bogs is considered against the smaller amount attributable to peat extraction compared to the total CO₂ emissions in England and the UK.

In 2012 the area of peat extraction in England is estimated to be 920 ha of which 350 ha is on hold pending the outcome of a public inquiry (Hayes, pers comm). The annual CO₂ emissions attributable to this area extracted to a depth of 20 cm is less than 200,000 tonnes. The total UK emissions for 2010 were 590.4 Mt and, assuming that 90% of these were from England, the emissions from peat extraction in England amount to only 0.04%. According to NE (2010) CO₂ emissions from degraded bogs in England are at least 3Mt per year meaning that CO₂ emissions from peat extraction in England are equivalent to only some 7% of this large 'natural' loss.

Archaeology and information

The third pillar of the DEFRA policy to stop the use of peat in horticulture in England is destruction of archaeological remains and palaeoenvironmental records. The Consultation document states that *'ironically, although peat extraction has directly led to the discovery of many buried archaeological treasures, it has also been responsible for significant damage to these finds'*. The use of the word 'significant' should signal that a major proportion has been affected in this way, but not so. DEFRA quotes a study carried out for English Heritage (Van de Noort et al, 2002) that shows that over the last 60 years peat extraction has been responsible for the destruction of 230 archaeological sites. What is not mentioned is either the total number of identifiable archaeological and historical and scientific information sites (c. 13,400) or the number that have been destroyed as a result a range impacts (urban and industrial development, conversion to agriculture; 2,880) or agents (peat erosion and wastage and drainage; 7,380). Van de Noort et al (2002) estimate that 10,490 archaeological sites have been damaged from these impacts although Gearey et al (2010) caution that *'there are no definitive data on the actual number of archaeological sites in the peatlands of the UK'* and point out that *'existing data are mostly from "hot-spots" of research (e.g. the Somerset Levels), the wider applicability of which is unclear'*. Taking the available information at face value shows that the impact of peat extraction may have led to the loss of 2.2% of all damaged sites or 1.7% of all estimated sites.

DISCUSSION AND CONCLUSIONS

It is not the purpose of this paper to attempt to show that peat extraction does not have environmental disadvantages but to correct the incorrect inferences introduced by misrepresentation of the scientific facts. In the case of biodiversity, no animal or plant species has become extinct as a result of peat extraction while some could become extinct or reduced in range as a result of inappropriate conservation measures. The remaining raised bogs with peat forming vegetation are protected by law and many that were cut over in the past have been or are in the process of being rewetted as a result of which their bog habitats are being rehabilitated, peat forming potential restored and biodiversity ranges increased.

Climate change is currently a very emotive and political topic that is a matter of great concern for international conventions, national governments and individuals. Most developed countries have committed to making major reductions in their greenhouse gas emissions by 2050; the UK Government is committed to reducing its by 80% (Climate Change Act, 2008). This will mostly be achieved by major reductions by the major emitters, for example energy generators and other heavy industries. The CO₂ emissions attributable to peat extraction in England are only some 200,000 tonnes a year compared to the 24 million tonnes emitted by the agriculture industry (0.8%). The use of peat in horticulture contributes a mere 0.04% to

England's total annual greenhouse gas emissions. No other sector of industry or society is being asked to reduce its GHG emissions by 100% so why is the horticulture industry being forced to do so?

The archaeological argument is irrelevant when placed in the context that less than 2% of the total number of estimated sites has been damaged by peat extraction and these would not have been discovered in the absence of the peat industry.

Looking back over the last 25 years it is evident that the issue of peat extraction for horticulture in the UK has become polarised between a profitable and important industry and an environmental lobby that does not agree with peat extraction under any circumstances, using arguments that cannot be substantiated scientifically. Successive UK Governments have been caught in the middle of this often acrimonious and sometimes belligerent dispute but, on balance, they have been swayed by pressure from environmentalists. It is time to re-evaluate this one-sided confrontation with a more realistic and pragmatic approach to the issues involved. Phasing out the use of peat in horticulture in England will not lead to an increase in biodiversity, a reduction in greenhouse gas emissions or improved protection of valuable archaeological sites. It will, however, threaten an important sector of the economy and the jobs of the many people employed in it.

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