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Making space for cultural ecosystem services: Insights from a study of the UK nature improvement initiative

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ABSTRACT

A study of the cultural ecosystem services (CES) arising from peoples' interactions with the rural environment is conducted within the context of a landscape scale, 'nature improvement' initiative in the United Kingdom. Taking a mixed methodological approach, the research applies, and demonstrates empirically, a framework for CES developed under the UK National Ecosystem Assessment (Fish et al., 2016). Applications of the framework involve the study of the 'environmental spaces' and 'cultural practices' that contribute to the realisation of benefits to well-being. In this paper empirical work is undertaken to inform the CES evidence base informing management priorities of the Northern Devon Nature Improvement Area (NDNIA) in south west England. Findings from a questionnaire survey, qualitative mapping, group discussion and a participatory arts-based research process are presented to document the many and diverse ways this study area matters to local communities. The paper analyses the qualities that research participants attribute to the environmental space of the NDNIA, the cultural practices conducted and enabled within it, and their associated benefits. The implications of the study for applying this framework through mixed methodological research are discussed, alongside an account of the impact of this approach within the NDNIA itself.

1. Introduction

Elaborating the cultural dimensions of ecosystem assessment and management is a growing area of innovation in ecosystem services research (Milcu et al., 2013) spanning advances in both theory (e.g. Schaich et al., 2010; Chan et al., 2012a, b) and methodology (e.g. Plieninger, 2013; Raymond et al., 2014; Tratalos et al., 2016). This innovation includes contributions arising from the follow-on work of the United Kingdom National Ecosystem Assessment (UK NEAFO, 2014; Bryce et al., 2016; Cooper et al., 2016; Fish et al., 2016; Kenter et al., 2016a, 2016b and Orchard-Webb et al., 2016).

The challenges associated with incorporating considerations of the cultural into the ecosystem services framework is well recognised. Many, for instance, have pointed generally to the methodological challenges associated with making clear linear links between ecosystems, services and benefits from a cultural starting point, and have emphasised the need to employ approaches that pay due recognition to

culture's interpretative and provisional qualities (Chan et al., 2012). More generally, practices of evidence gathering and measurement surrounding this class of ecosystem service have tended to highlight the need for a participatory and situated approach, one rooted in the self-reported thoughts, feelings and perspectives of communities located *in situ*: that is, culture as an expression of people's occupancy, experience and affiliation with landscape and place (Plieninger et al., 2013).

This paper is set within the context of this developing, still generally experimental, domain of research. It applies and illustrates empirically the framework for understanding CES and their benefits set out by Fish et al. 2016 Conceptually, this framework is designed to foster a relational approach to understanding the cultural dimensions of ecosystem management, as well as clarify further the analytical basis of practical assessment and measurement. The relational approach roots CES in an understanding of material environmental spaces and cultural practices and their relationship to a range of benefits to human

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well-being. Methodological plurality is advocated as a way of revealing the concept's interpretive character, whist making services and benefits amenable to systematic appraisal.

The empirical focus of this paper serves as a terrestrial companion piece to the marine study Bryce et al. (2016). Drawing on empirical work conducted in conjunction with the UK NEA Follow-on, we specifically focus on a landscape scale 'nature improvement' initiative in the UK, where the development of evidence-based approaches to monitoring CES is a guiding concern (Defra, 2011). The analysis centres specifically on a study of the 'Northern Devon Nature Improvement Area' (NDNIA), one of 12 pilot nature restoration projects established as an essential part of the vision for nature conservation by the UK government's environment ministry under the commitments of its Natural Environment White Paper (Defra, 2011).[1] The White Paper was the first major policy statement on the UK natural environment in over a generation; the establishment of Nature Improvement Areas (NIAs) is an essential part of its vision, involving:

> "large, discrete areas that will deliver a step change in nature conservation, where a local partnership has a shared vision for their natural environment. The partnership will plan and deliver significant improvements for wildlife and people through the sustainable use of natural resources, restoring and creating wildlife habitats, connecting local sites and joining up local action" (Natural England, N.D.)

The NIA initiative is interesting with respect to the applied ambitions of the ecosystem services framework. Ecosystem services have emerged as an important dimension of the delivery logic of NIAs, and the way NIA projects report against progress towards 'improving nature'. This emphasis reflects the influence of the philosophy and findings of the UK NEA (2011) on the writing of national policy commitments for the natural environment, including the White Paper. The NIA's provide an important venue for demonstrating how the principles of ecosystem service based approaches to resource management can be applied in a real world context. NIAs are ultimately led by a national monitoring framework that make reporting against CES compulsory, using a single indicator, but the way in which particular dimensions of ecosystem services thinking are emphasised in the context of an NIA's ambitions is more open and discretionary.

In this research we develop an approach to CES that reflected the NDNIA's interest in using CES as a context in which priorities for landscape scale ecological restoration could be explored given the area's cultural significance for local communities. The research applies the novel conceptual framework and methodological logic of Fish et al. (2016) to advance these NDNIA goals. This includes methods of assessment and interpretation by way of questionnaire survey, mapping, group discussion, textual analysis and arts-based environmental research (see also Edwards et al., 2016). The novelty of this paper lies in the exploration of the challenges of employing this new framework empirically. More generally, it represents a test of the utility of the concept within a practical decision making project working at the landscape scale.

We begin the paper by introducing the conceptual framework for study before characterising the NDNIA case study area both culturally and environmentally. This provides the context for our empirical research, where we document the many and diverse ways that this rural landscape matters to people, moving through an analysis of the qualities that survey respondents and discussion group participants

attribute to this environmental space as a whole, and an assessment of the practices that shape and enable them as significant, and analysis of associated benefits. These findings are further explored in the context of those from the qualitative and creative mapping processes, where we connect these general insights to their local and particular expression. The implications of the study for applying this framework through mixed methodological research and are discussed, alongside an account of the impact of this approach within the NDNIA itself.

2. Conceptual framework

As with other ecosystem services, the notion that cultural services flow effortlessly from underpinning natural capital is an acknowledged simplification of the ecosystem services world-view (Braat and De Groot, 2002). CES are a product of natural processes, the application of human labour and the outcome of human thought and perception. They are created practically and symbolically through peoples' interactions with, and understandings of, ecosystems. In this paper we specifically advance the definition of cultural services provided by Fish et al. (2016), namely the *contributions that ecosystems make to human well-being in terms of the identities they help frame, the experiences they help enable and the capabilities they help equip*. The idea of CES advanced by these authors builds on the arguments of the UK NEA and its subsequent evolution as a framework for practical use by decision makers during the follow-on work.

The key dimensions of this framework are discussed at length by Fish et al. (2016) and are summarised in Fig. 1. In general, the framework is distinguished by its relational focus; on the interactions that shape and enable the links between ecosystems and well-being. It makes distinctions between environmental spaces, cultural practices, cultural goods and cultural benefits to convey how these links can be explored understood conceptually and explored empirically. These components of the framework and their interactions are understood to be invested in wider cultural values, defining the norms and expectations that govern them..

This relational approach builds on the widely influential logic of linking ecosystems to well-being by way of a cascade (Potschin and Haines-Young, 2016), in seeking to make clear analytical and empirical distinctions between components of the cascade, and emphasising the need to identify the ecological characteristics and qualities of environmental spaces that contribute to CES and their associations with particular localities. Conceptually, the framework's relational focus is designed to clarify that services and benefits do not simply *arise from* ecosystems, but are co-constructed through the interaction between people and their environments.

Following the framework, it is in the relationship between environmental spaces and cultural practices that gives shape to the idea of 'cultural ecosystem services'; an assumption that distances thinking from the commonly received, if problematic, wisdom that cultural services are purely intangible and non-material phenomena (e.g. MA, 2005). The relational interactions between these practices and spaces, it is suggested, are associated with a range of physical and non-material benefits to well-being, which are distinguished further in terms of 'identities', (emphasising symbolic associations); 'experiences' (emphasising encounters with nature) and 'capabilities' (emphasising the acquisition of skills, proficiencies and health). In empirical terms, Fish et al. (2016) argue that methodological plurality is required to generate both interpretative understanding and systematic appraisal of the components of the framework and their interactions. Before illustrating our methods for implementing this framework in the NDNIA, we first expand on the general cultural, socio-economic and environmental conditions that define our case study area.

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[1] The time-limited project based focus of NIAs can distinguished from the goals and work of more durable landscape designations, such as National Parks, and their geography may or may overlap with them. For instance, in the NDNIA, the area corresponds with the MAB North Devon Biosphere, but not the nearby Exmoor and Dartmoor National Parks.
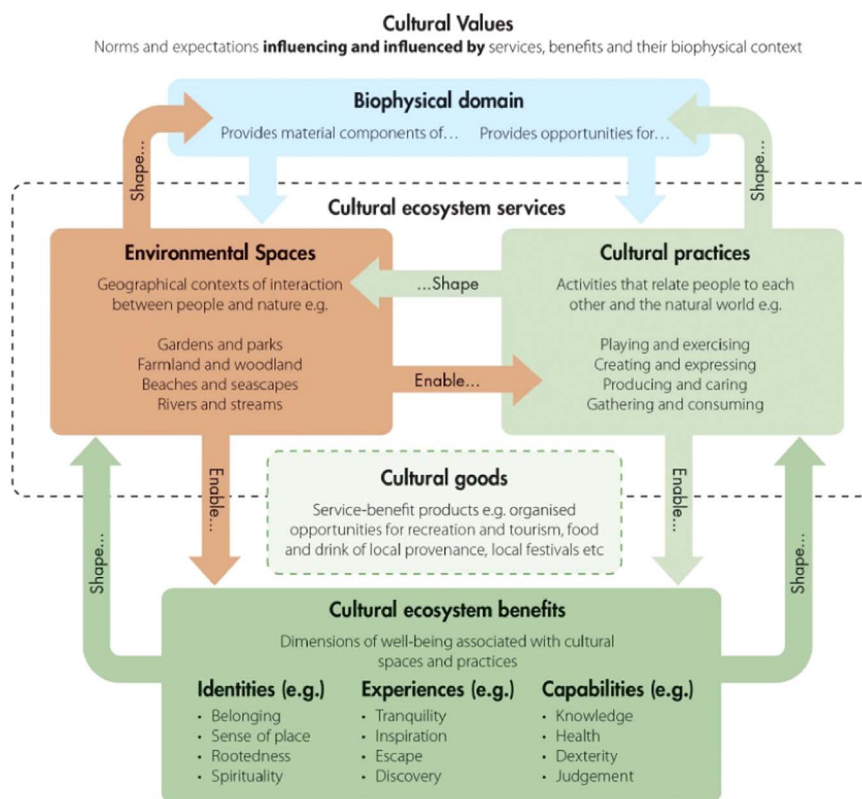
Cultural Values

Norms and expectations **influencing and influenced by** services, benefits and their biophysical context

Fig. 1. Conceptual framework for cultural ecosystem services.

3. Linking Life in the Torridge[2]: the Northern Devon Nature Improvement Area

"North Devon felt like a island …[]… Buried in their deep valleys, in undateable cob-walled farms, hidden not only from the rest of England but even from each other, connected by the inexplicable, Devonshire high-banked deep-cut lanes that are more like a defence-maze of burrows, these old Devonians lived in a time of their own. It was common to hear visitors say: 'Everything here's in another century! ' But what they really meant, maybe, was that all past centuries were still very present here, wide-open unchanged, unexorcised and potent enough to overwhelm any stray infiltrations of modernity... []...how rapidly that changed within the next decade"
Ted Hughes, (1979: 2006 edition: vii)

The sentiments of late UK poet laureate Ted Hughes are conveyed in the preface to his acclaimed Devon farming sequence *Moortown Diary*; a poetic framing of the North Devon landscapes within which our case study sits, and one that speaks well to the idea of ecosystems as reflecting longstanding interactions between nature and culture. North Devon is in South West England and many other widely circulated cultural representations have served to dignify this area with similar meanings (see Fig. 2), most notably the work of the landscape photographer James Ravilious, which adorns postcards and other touristic paraphernalia (see Hamilton and Ravilious, 1997 for examples), and that of the author and naturalist Henry Williamson. This is the home for Williamson's celebrated and influential novel, 'Tarka the Otter' (Williamson, 1927; 2009), which has acted as a key branding device for informal recreational engagements within the NDNIA landscape (such as the 'Tarka Trail'). More recently, the area

has capitalised on the recent cinematic adaption of a locally inspired literary work, branding it as 'War Horse Valley' (Morpurgo, 1982)..

The general attributes of this landscape have been documented in detail in the policy literature and act as important cultural representations and cultural re-interpretations of significance in their own right. For example, in the UK's Natural England Character Area Assessment for this area (Natural England, 2013), a framework for defining landscape scale priorities across the UK, the area's signature characteristics are described in terms of wider cultural heritage and sense of place. Here are some indicative comments of the Natural England statement:

"In general, the character of the landscape is unchanging and somewhat timeless"
"A remote and tranquil landscape, uncluttered by modern development, but at times and in places wild and exposed"
"A strong sense of history, but often reflecting the lack of human presence or activity, or a marginal existence"
"[Its] sense of place is provided by the pastoral character of open, rolling ridges and intervening intimate river valleys with fast flowing rivers, a mosaic field pattern defined by windswept hedgebanks and farmstead trees, patches of heath, common, coniferous blocks and valley woodlands"
"The area remains a national 'island of tranquillity', largely undisturbed by major development or roads"

All of these comments are highly interpretative and open to elaboration and debate, but they are interesting in the present context for they seek to capture the material and non-material qualities of a landscape that reflect interactions between people and nature, and the way a landscape may be valued or associated with particular benefits. In our research the cultural framing of this *environmental space* is thus already heavily presaged on wider, what cultural studies has long understood as, 'circuits' of *cultural practice*, through which shared meanings and representations of 'environment' cohere and exert influence (Burgess, 1990). Making sense of CES partly means working

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[2] The official 'strap-line' for the NDNIA.

Stephen Squire, hedger, taking a tea-break, Langham,
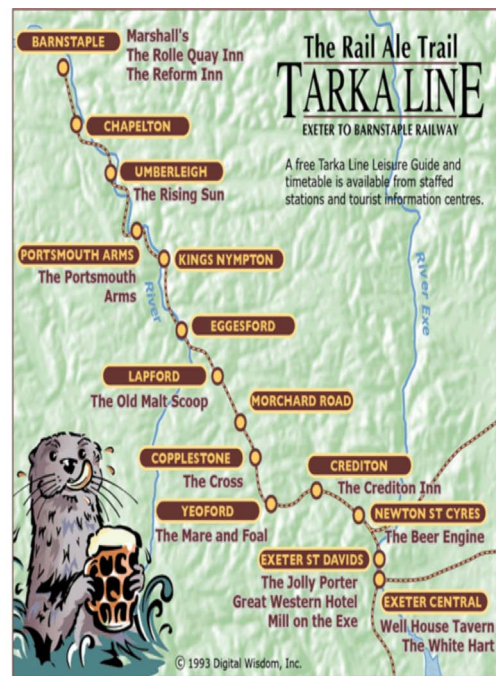Dolton, England, 1980. James Ravilious.

Fig. 2. Three cultural representations of environmental space: the NDNIA. Cultural ecosystem services are expressions of collective/shared values. These values are embedded in the culture and traditions of locality, region and nation. Such values can be expressed in a variety of media forms, from visual culture to poetic and literary genre.

with these wider, non-conversational, bodies of evidence in policy, scientific and popular discourse: the cultural text as a gateway in to cultural values and shared ways of seeing the environment (Fish et al., 2016).

From the perspective of landscape restoration, the NDNIA was funded under the NIA pilot scheme to restore and connect habitats of the 72000 ha River Torridge catchment. The poor, impermeable soils are difficult to farm, and the area has a maritime climate – mild, but with high rainfall. The area contains significant natural heritage, reflected in the wider area's status as a UNESCO Biosphere Reserve. This heritage includes populations of two of the ten most threatened species in Europe, 120 scheduled species, 2112 ha of recorded priority habitat (as defined by the UK Biodiversity Action Plan), and 35% of the UK's remaining Culm grassland This is damp unimproved grassland comprising a variety of different plant communities, including purple moor-grass dominated mires, rush-pastures, wet heaths and tall herb-fen. Importantly, the NDNIA promotes the protection and restoration of these habitats as part of wider ecosystem service delivery: flood control, water quality and carbon sequestration.

Yet, if it is in the delivery of these regulating services that the idea of 'improving nature' accrues part its meaning, there is also a wider social and economic narrative shaping its purpose. The NDNIA encompasses a remote and economically deprived area and a higher than national average share of isolated, disadvantaged households and communities. Agriculture and recreational tourism are the main economic drivers within a low wage economy. The ambitions of material landscape restoration sit alongside a concern to build resilient communities.

In principle, NIA's are designed to indicate progress in the area of CES through a single indicator either through reference to changes in landscape character, extent of public rights of way, condition of historic environment features or access to natural greenspace and/or woodland. However, the individual NIA's are presented with considerable latitude in the degree to which CES are operationalised within wider project activities. The social and economic narrative that pervades the

NDNIA, and the wider narratives that distinguish the area as culturally significant, provide a context in which the lead NDNIA partner, the Devon Wildlife Trust, has gravitated towards CES as a central part of its work.

4. Methodology

In this section, we describe the main tenets of the research undertaken in the NDNIA to help inform the project's approach to CES. It draws on structured questionnaire survey, mapping, group discussion, textual analysis and arts-based methods (see Raymond et al., 2016). These methods focus on locality, involving the study of people who *reside* in the area, and the need for local engagement, which was one of goals of the NIA programme. We did not therefore explore the views of people who pass through and visit the area, nor those who experience and interact with the area at a distance, for instance, by consuming media about it.

4.1. Structured questionnaire and mapping exercise

We used a structured questionnaire survey to make an assessment of cultural services and benefits that reflected the conceptual framework outlined above. The questionnaire primarily involved respondents ticking standardized response boxes but contained space for open, qualitative, comment. It solicited general insights on: the 'qualities' people felt were associated with the surrounding natural environment (covering a range of attributes such as associations with scenic value, tranquillity and character); the types of 'practices' they engaged in (such as walking, creative practice and gardening); and the 'benefits' arising (such as solitude, relaxation, sharing). These aspects of the research focus on the case study area as a whole, building up general associations with local environmental space in terms of qualities, practices and benefits. An important caveat to note here is that the information about these benefits was not disaggregated around

the framework's final logic of 'identities', 'capabilities', and 'experiences'. This was because the research occurred in parallel with the framework's conceptual refinement, partly reflecting the emerging findings of the research itself. At the time of the research, the study started with the *a priori* concept of 'experiences' alone, to distinguish the realm of benefits from those of services.

Building on techniques of participatory mapping developed in ecosystem service and wider environmental scholarship (e.g. Brown and Raymond, 2007; Fagerholm and Käyhkö, 2009; González et al., 2010) the questionnaire was accompanied by a map of the study area, upon which respondents could begin elaborating on their generalised responses, making direct reference to more localised features and areas of the environmental space. Specifically, in this study, respondents were invited to mark this map with green and red 'dots' to signify, respectively, areas considered 'special, significant or valuable', or places 'unpleasant, neglected or challenged'. These terms were not accompanied with operational definitions. Our intention was to use them as non-exhaustive synonyms to help provoke associations between green/good/positive and red/bad/negative feelings for particular environmental spaces. However, all respondents were asked to explain their reasoning, thus making clear associations between a dot and reasoning and allowing them to be coded according to emergent themes. What is significant analytically is that individuals responded independently of others, (cf. Kenter, 2016, where a similar process was undertaken but in groups), to produce spatially explicit patterns and themes across a group. With access to the reasoning of respondents we can also to begin to link specific spaces with types of cultural practices and patterns of cultural ecosystem benefit/dis-benefit.

Questionnaires were hand-posted to 1450 households throughout the case study area, almost complete coverage. This resulted in 294 useable responses (a return rate of 21%). A summary of the overall respondent profile is presented in Table 1. As a basis for making claims about 'community views', this profile cautions us against interpreting findings as representative. It is, for example, particularly notable that approximately 43% of survey respondents were over 65 and over 48% were retired (compared with 22% recorded for North Devon under the 2011 National Census). This age profile may be due as much to the choice of technique – the completion and return of a questionnaire survey requires the 'luxury' of time – as it is about inclinations to engage in underlying survey concerns. Our gender balance (60% male, 40% female) contrasts too with census data for the area (49% and 51% respectively), though is consistent with data on ethnicity (over 95% White). In addition, it is worth noting that, whilst almost all households in the survey area received a questionnaire, the survey was not addressed at the household level. It asked questions that were about respondents' views and activities, not about all those who lived in the household. Finally, we judged that the questionnaire's complexity was not suited for young children. We specifically asked for any person over the age of 16 in the household to respond.

In terms of data processing and analysis, questionnaire data were entered into SPSS (Version 18) for analysis which was used to provide descriptive statistics from the data such as the number of respondents answering in certain ways. In some cases, questionnaire items were combined to form scales (see Section 5.3) and tests for internal

consistency were used to ensure that items forming the scale were all measuring the same underlying construct. The test used for this was Cronbach's coefficient alpha. Tests for differences in the data were also carried out to discover any variation in how different groups responded. For example, a Mann-Whitney *U* test, the most appropriate test for differences between two independent samples of non-parametric data, was used to test the difference between responses from males and females. A Kruskal-Wallis test, which allows for tests of difference between three or more groups, was used to test for differences across age groups.

Qualitative comments were transcribed into Microsoft Word and then imported into qualitative analysis software, NVivo (Version 9). Each transcription was analysed for salient words, sentences or passages that were coded to succinct labels (nodes) identified as important in the context of the research. The parent codes used were guided by the *ex-ante* concepts of the CES framework spanning qualities, the four categories of practice and experiences. At this stage of analysis, experiences were coded to reflect a range of relationships that people had with the landscape and the ways in which interactions with this contributed to well-being. As the analysis progressed, these nodes were refined and new nodes were created or merged in an analysis guided by grounded theory (Corbin and Strauss, 1990) which enabled the researchers to form a picture of relevant references and themes, and the software enabled a detailed examination of them, such as through node and word frequency count (see Fig. 6 for word clouds based on word frequencies). The resultant categories of benefits detailed in the framework (identities, capabilities and experiences) thus emerged from the data and were identified as capturing the main benefits for well-being from participants' interpretations of the qualities of the area and the practices they undertook there.

The mapping exercise involved transferring the green and red dots from the individual questionnaires to 'meta-maps' to layer in a geographical information system (GIS). This was not intended as a means of measuring pre-defined attributes as described in similar studies (e.g. Brown and Reed, 2011) but instead to illustrate the concentration of dots associated with perceived benefits or disbenefits. In addition, the qualitative comments associated with each dot were examined to understand the reasons behind their locations. 'Heat maps' were also produced from the dots to show their spatial distribution and intensity across the case study landscape (Fig. 4). These were produced by creating a grid measuring the density of green/red dots within a 500 m range of each 50 m grid cell. This grid was then overlaid on the map of the study area used for the questionnaire. We recognise that a more elaborate participatory GIS process using spatial statistics would be possible here (see Brown and Reed *ibid*, Fagerholm et al., 2016, Raymond et al., 2016). In using this technique we are primarily demonstrating the potential of interpretive participatory mapping approaches.

4.2. Community discussion groups

We used the findings of the questionnaire and mapping exercise to inform a group based discussion with participants in the survey, thus moving from broad and shallow survey to narrow and deep discussion and interpretation of findings. In principle, this presented an opportunity to test experimentally the effect of deliberative processes on value change. However our research did not start from the premise of comparing and contrasting methodological effects of different approaches to valuation (see Raymond et al., 2014). The focus of the process was designed to amplify, deepen and clarify the qualitative reasoning behind the results of structured questionnaire and mapping exercise and thus reveal interpretatively what could not be inferred from these general survey instruments.

In particular, the results of the questionnaire and mapping process were put to respondents at three community events held by the project team and NDNIA staff in the case study area. Approximately 40

Table 1
Overall respondent profile.

Employment status	%	Age	%	Gender	%
Full time paid work	27.2	*16–24*	1.8	*Male*	40
Part time paid work	17.3	*25–34*	5.7	*Female*	60
Full time education	1.4	*35–44*	11.8	*Total*	100.0
Retired	48.4	*45–54*	17.9	**Ethnicity**	
Unemployed (seeking work)	2.5	*55–64*	20.4	*White, British*	98.4%
Unemployed (not seeking work)	3.2	*65+*	42.5	*Other*	1.6%
Total	100	*Total*	100.0	*Total*	100.0

respondents from the questionnaire survey came forward to take part in these discussion groups. Participants were thus self-selecting in that they had indicated an interest and willingness to take part in group discussion in the questionnaire. At these events participants elaborated understanding of the quantified datasets from questionnaires and contributed explanation of the patterns revealed by the dots on the maps.

Further stimulus to discussion was provided by introducing statements from the local assessment of landscape character noted above, as well as presentations of popular cultural representations of the area by the landscape photographer James Ravilious. The group used the texts and representations as stimuli to elaborate priorities for the future, both in general for the landscape and in relation to particular areas of the map. The group discussions were transcribed in full and coded in NVIVO against the themes established in the process of analysing the questionnaire data.

4.3. Creatively engaging and constructing the NDNIA with young people

Finally, alongside this exercise in collecting data through the stated reasoning of adult research participants, we used experimental arts-based techniques to construct and elicit understandings of this rare Culm landscape among young people. The critical case for adopting these techniques *vis a vis* deliberative and consultative survey-based approaches to ecosystem services assessment have been comprehensively detailed in Edward et al. (2016) and a wider arts and humanities review conducted under the UK NEA Follow-On (UK NEAFO, 2014) and is not rehearsed in detail here. Our starting point for this aspect of our research was a concern to temper an understanding of CES as one of simply capturing views and interpretations in 'ready-made', self-reported and conversational forms. It proceeds from the assumption, born out in wider and diverse scholarship on the senses and perception (for a social sciences and humanities overview www.sensorystudies.org/), that arts-based research has an important role to play in mediating, creating and expressing peoples' understanding of the natural environment. Participatory art activities are often purported to encourage learning about nature's value through practical experiential activities, in creative and accessible ways, allowing participants to identify what matters to them about their environment, and to enable them to begin to articulate this value through a variety of documentation and response techniques in the landscape. In effect, this approach to research involved engaging participants in a cultural practice from which an understanding of the environmental space was then constructed and assigned significance.

Working with a local arts-based organisation – Beaford Arts[3] – we contacted three rural schools within the case study area to engage children in a process of walking this environment and mapping their responses. We used two primary methods straddling independent and group based activities. First, in the style of Debbie Locke, an artist exploring mapping using experimental drawing techniques (www.debbielocke.com), the method of tracking and recording movement during a walk as the ground undulates and makes marks differently for every walker, using so-called 'movement machines'. Second, in the style the painter, sculptor, graphic artist, and poet Max Ernst (www.max-ernst.com), the use of frottage, in which the creative process rests on using drawing materials to create a rubbing of a textured surface. In our case, this involved participants taking rubbings directly from the environment to recreate a sense of landscape and their textured surroundings. In doing so, participants learnt not simply how to 'look', but how to investigate and interrogate an environment with all

their senses: visually recording and responding to what they could see, feel, hear, smell and taste.

Importantly, the final product of this process was participants creating a map that integrated their activities into a single visual representation and interpretation of their surroundings. Specifically, the product made was a google-based map overlain with artefacts collected, as well as photographs, sound recordings and personal reactions to the environment. We recruited 50 children aged six to ten in this process, which was used as part of learning subjects in the school-based curriculum, in particular: enhancing literacy through the use of descriptive words that they have learnt in class; understanding geography and history through enquiry into place and space; exploring science in their understanding of the senses, species and habitat cycles; and developing artistic skills through creative, imaginative and emotional responses to the environment. For our purpose, these process-based activities are not only educational devices, they are also constructions of the world: highlighting what people prioritise in their responses to environment and how it makes them feel. In our analysis we therefore explore the potential of these techniques as further investigative tools for CES assessment.

5. Results and analysis

In this section, we present the key findings from our research process. In the first three sub-sections we integrate survey and group discussion to explore the general qualities people attribute to their surrounding environment, the types of cultural practices they undertake and some of the benefits they associate with them. The way in which these qualities, practices and benefits reflect the views of particular social cohorts is also drawn out. Again, this integrated approach reflects our underlying intention to use the survey and groups as an accumulating explanatory narrative about the study area, rather than an exercise in comparing and contrasting the findings of different valuation techniques.

This general analysis is contextualised further by the findings of the mapping exercise in the fourth sub-section. We reveal how similar specific environmental spaces are singled out in both the questionnaire and group discussions, including the way these spaces are specifically identified as particularly valuable to people, and what risks, threats and challenges are associated with them. In the final sub-section of this analysis, we discuss examples of the outputs of the participatory arts-based process. Taken together, we suggest this pluralistic approach captures the diversity of ways in which the NDNIA can be framed through and around an understanding of the cultural. It provides information of utility on both material and non-material dimensions of cultural ecosystem services to decision makers seeking to understand where priorities for management lie and what measures might be used to indicate progress against them.

5.1. Qualities associated with the NDNIA environmental space

Characterising and understanding the attributes people associate with environmental spaces is an important way that assessment of the material aspects of CES can be related to a measure of a local environmental quality and thus inform management of the material aspects of landscapes. In the survey a range of positive attributes associated with the environmental space of the NDNIA was revealed (Table 2). The survey drew on key elements of the landscape character assessment described in Section 3 to inform choices. In particular, it asked respondents to reflect on the extent to which they agreed that their local environment could be described as having a 'character all of its own' and 'rare or unique' wildlife, as well as the extent to which the environment could be described as a place of 'tranquillity' and 'beauty'.

In presenting these response categories it is readily acknowledged that choices are being pre-framed by a very particular set of sentiments about how to value countryside localities. These attributes are therefore

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[3] The organisation is also the custodian of the Beaford archive, celebrating the work of James Ravilious detailed above. (See www.beaford-arts.org.uk/).

Table 2
Four Qualities of the local natural environment.

Attribute	Mean[*]	% total strongly agreeing/ tending to agree	% total strongly disagreeing/tending to disagree
A place with a 'Character all of its own'	1.59	87.5	1.1
A place of 'rare/unique wildlife'	2.27	53.6	4.2
A place of 'tranquillity'	1.60	87.4	2.5
A place of 'beauty'	1.31	97.2	0[*]

[*] = A 5 point likert-scale was used where 1= strongly agree and 5=strongly disagree.

putative, rather than objective, markers of quality, but the research shows they reflect commonly held assumptions about this environmental space. A general finding of the process is that the local environment is almost universally understood as beautiful in some way, and one closely associated with the idea of character and tranquillity. These sentiments were supported in the open-ended comments of the survey, as well as within discussion at the community meetings. Qualities such as character, tranquillity and beauty tended to be linked together as mutually reinforcing attributes of this environment, alongside other attributes not explicitly stated in the survey such as tradition, timelessness, stillness and wildness. Thus, according to one questionnaire respondent, "[It's] a place of beauty and tranquillity. [It has] a character all of its own – traditional, rural, small fields, wild and beautiful", and another, "[t]he timeless feel of this area is its main attraction and contributes to the magic and tranquillity of the area". The emergence of a version of local rurality that was qualitatively different from the 'domesticated rusticality' of a rural idyll was also an important underlying dimension; for example, one questionnaire respondent suggested, "I love this part of Devon because it is rough around the edges, less urbanised and less chocolate box than other parts of Devon".

However, an interesting discrepancy arises in the context of 'rare/ unique wildlife'; an area of survey questioning implying some level of environmental literacy. At one level, general awareness of the area as being formally designated for its natural heritage and importance was low; just over a quarter of questionnaire respondents were aware they lived in a 'Nature Improvement Area' and less than a fifth were aware of the area's UNESCO Biosphere Reserve status. However, respondents and participants introduced subtleties to the idea of 'special' nature. One commented that "the wildlife is *interesting* if not particularly unique", while another questioned the premise that nature had to be rare and unique to be important, stating that "the wildlife doesn't have to be rare and unique, I am really happy to see the common things also, just the birds in the garden". A small number of questionnaire respondents enjoyed pointing to the material absence of iconic local nature – "never seen an otter! !" – while others sought to downplay expert languages that surrounding the areas natural heritage: "we are told it is distinctive of our area but I don't think that anyone actually says "that's a beautiful piece of Culm". Indeed, what made the area *special* was nature's very *ordinary* everyday quality: a place where nature was real, present and abundant.

It is these everyday qualities of place that emerged as important to why participants considered they chose to live in the area, and what prompted people new to area to move there. The questionnaire survey revealed that nearly three quarters of respondents associated their decision to live in the area as governed by a sense of affiliation with the local natural environment, and the qualitative comments in the survey as well as the group discussion reinforced this point:

"I am an artist, I paint wildlife and landscapes. I moved to a house in Beaford for the beautiful landscape and wildlife"

"One of the main reasons for moving to Devon in 2008 was to live in an area where I can get close to the natural environment. Nature conservation is very high on the agenda for me and I never cease to be amazed and delighted by what I see and experience"

"I lived here and moved away for 20 years and then came back.

When I wasn't here, I remember saying that if I ever did come back to Devon then it would be here because it is so green

Even where this link to the natural environment was not a motivating factor for migration it was sometimes constructed as a welcomed surprise. As one put it in discussion, "I just moved here to find a house and to settle so the environment as not my primary concern. I was totally amazed how beautiful it was. I can't believe where I am living".

5.2. Cultural practices and the NDNIA environmental space

These qualities of the local environmental space are constructed in conjunction with a large and varied set of cultural practices described in Fig. 3, the second key aspect of CES. Informal, non-specialised practices involving engagements with the natural environment were prominent: walking (including walking with dogs); sitting around; eating and drinking outside (including pub gardens), taking in a view; these are the activities residents across the sample commonly participate in. However, the *age* profile of residents is revealed as being a significant determinant of patterns. Active pursuits such as camping, running, cycling, sport games were found to be most popular amongst the younger age groups (16–34); whilst observing and feeding wildlife are predominantly associated with people over 55 years of age (70% of those who responded to this item were aged 55 and over). In this last respect, interactions with wildlife are often ornithological. As one person summarised it in group discussion: "feeding wildlife is basically about feeding birds"..

In conveying the importance of these interactions with nature it is salient to also note how nature is often understood by respondents as a living, changing entity (Brassley, 1998). The ephemerality of experience – changes of light, changes in season, the movement of flora and fauna and so forth- are all put forward as important to how people relate to their natural worlds. For instance, one said that it was:

"Just incredible to pull back curtains and look at the scenery. To watch the weather moving in, just to take time to look and if it's the right time, to watch the barn owl flying across the field at the back of
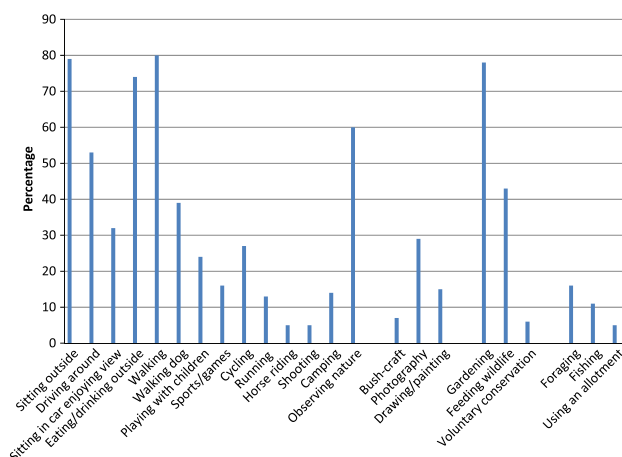
Fig. 3. Cultural Practices in the NDNIA.

the house and perch on the hedge".

In this vein, some respondents remarked how interaction with the environment was best experienced as a sedentary, contemplative pursuit, thus:

"I often feel that cyclists on the Tarka Trail[4] miss so much, the wildlife is just so fascinating to watch. You can see deer and lots of birds, and even just cows in fields. It's amazing what you can see and hear just standing still for 10 min".

The survey also revealed gardening as a prominent form of interaction. Access to a garden was high in the sample (95%) with the privatised nature of these environmental spaces contributing to their enjoyment (67%) as found in other studies (Bhatti et al., 2013). With the exception of the very youngest in the profile (16–24) engaging in gardening activities was a common practice across the sample; over three quarters suggested they did some form of gardening with 58% of the overall sample suggesting they grew fruit vegetables and herbs. This focus on gardens is an interesting contrast and caveat to the landscape focus of the NIA, introducing a quite different scale and context to what might constitute local environmental affiliation.

5.3. Associations between cultural ecosystem benefit, environmental space and cultural practice

The study reveals a range of attributes that culturally define the quality of this environmental space, and a series of cultural practices both enabled by and constructing these spaces. In turn, as Fig. 1 describes, this relational field of spaces and practices – of cultural ecosystem services – shapes and is shaped by a range of benefits. In the survey we asked respondents to consider the extent to which they felt their interactions with, and placement within, the environment contributed positively to their well-being. In Table 3 we present a summary of our findings. Each category of benefit is drawn from one or a combination of survey questions. The results illustrate a general pattern: that in so far as the case study area is associated with a range of positive attributes (such as beauty, character, tranquillity) and practices (such as walking, gardening, bush-craft[5]), so too is it the context for a range of physical and mental benefits to well-being. We learn that this is an environment associated with contributions to physical health, to feelings of escape, to relaxation and to sharing, and so forth. Comments made on the questionnaire and in the group discussion emphasise how these experiences register with people in a variety of ways. Associations with health stood out. Respondents spoke of their engagements with the natural world as keeping them "sane"; as "essential for well-being and achievement of happiness and the feel-good factor"; and, for some, as having definitive effects on physical health, such as living with diabetes. Others sought to link experiences to the idea of freedom; an experience often associated with the notion of an idyllic childhood and the process of learning and discovering the world:

"I was happy to bring up my children in a rural environment. It offered them a freedom to explore, learn, enjoy and I hope, appreciate the beauty of nature"

"I am a teacher and my school (Woolsery) undertake Forest School in the local environment – they learn bush-craft skills and make things using tools. As a result, they are enthusiastic and resilient"

Whilst less strongly defined, the link to spirituality is also of note. So for instance one commented that, "walking is a very good way for me to maintain my emotional wellbeing – and this is a beautiful place to talk to God" and another, "[T]he [questionnaire] statement that most

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[4] A popular public access route through the area.
[5] A term of encapsulating the learning of outdoor 'survival' skills, such as hunting, fishing and the building of shelters.

Table 3
Benefits associated with the NDNIA environment.

Rank	Benefit	Mean[*]	% total strongly agreeing/ tending to agree
1.	Health/exercise	1.37	95
2	Renewal	1.44	93
3	Escaping	1.46	92
4	Relaxation	1.48	92
5	Inspiration	1.57	86
6	Solitude	1.65	83
7	Sharing/socialising	1.67	80
8	Discovery/skills & learning	1.83	74
9	Belonging	1.95	70
10	Spirituality	2.52	43

[*] A 5 point likert-scale was used where 1= strongly agree

moves or resonates with me is 'experiencing something spiritual'".

Again, our analysis sought to explore if any of the benefits were sensitive to the social profile of respondents. To do this we focused specifically on four key ideas: feelings of inspiration, relaxation, happiness and spirituality which were combined to form an 'experiential' scale. This scale revealed a high internal consistency (Cronbach Alpha score=0.76) and was therefore used in further statistical tests. A Mann-Whitney U test was used to determine whether any differences existed between how males and females had rated items on this scale. The test showed that a statistically significant difference did exist in male and female responses (z=−2.28, p < 0.05) with females agreeing more strongly than males with all items on this scale relating to inspiration, spirituality, happiness and relaxation (median male=2.00, n=93, female=1.75, n=129 (items rated 1=strongly agree on our likert scale).

Further testing, using a Kruskal-Wallis test, revealed a statistically significant difference in ratings on the experiential scale across age groups (X^2=13.1, p > 0.05, n=218). Interestingly, appreciation of these experiential benefits appear to rise and then dip as we move across age groups. The younger group (16–24) for example, recorded the lowest scores (median=2.25), whilst the middle groups (35–44 and 45–54) recorded the highest scores (median=1.63 and 1.5 respectively) and the eldest group (65+) recorded lower scores (median=2.0).

5.4. Mapping cultural benefit/dis-benefit 'hotspots'

All of the analysis above is about the general cultural associations with 'nearby' nature. The process of mapping out positive and negative associations with particular areas and features of this environmental space was designed to give this general information a more spatially explicit focus with the heat map based on the measuring the density of green/red dots (see Section 4 above and Fig. 4). From a deliberative starting point what is of general note here is the way revealing the meta-maps, alongside word clouds (see Fig. 5), within group discussion was a provocation for debate about the shared values that define the case study area. Although we did not use the process to test how values might be transformed through the introduction of these stimuli, the effect of participants witnessing emergent group patterns was an important device in contextualising the survey based process through group – intersubjective – reasoning (see relatedly Kenter, 2016, and Kenter et al., 2016a, 2016b)...

The first point to note from the perspective of analysing the patterns in the heat map is the way responses to the mapping process were concentrated in a number of key areas. Major concentrations of green are revealed for two key spaces in particular – a woodland nature reserve (known as 'Halsdon') to the north of the case study area, and a large area of open access common land to the south (known as 'Hatherleigh moor'). These spaces come to embody more general sentiments about the special qualities of the local environment. They

Fig. 4. Mapping benefits/dis-benefits.

Special, significant and valuable spaces

Unpleasant, neglected and challenged spaces

Fig. 5. Benefit/dis-benefit 'Word Clouds'. Word clouds represent patterns of word use; the bigger the word the more strongly it features within a body of text or speech. These are useful devices to draw out and convey ideas as the basis for group discussions.

are where many of the practices and sentiments about well-being described above coalesce. Beauty and tranquillity figure highly in discussions and comment about these environments, but there are subtle differences: Halsdon is primarily understood as a place of nature richness; Hatherleigh Moor a place to take in dramatic views. The latter area was more generally interesting in the way it was strongly affiliated with the identity of the adjacent town. So for instance, one commented, "Hatherleigh Moor is very special to people who live in Hatherleigh. If you talk to people who have lived here all their lives, Hatherleigh moor is very special to them".

Clusters of dots also tended to occur over and around major settlements surveyed. In other words, valued environmental space is strongly related to an immediate sense of locality. The marking of personal gardens on maps was one dimension of how this was expressed. The placement of a settlement in its wider natural setting was also of general importance. For instance, one of the villages, Iddlesleigh, was singled out by people living across this landscape as of special value because the village was understood to offer uninterrupted views of a quintessential Devon landscape. This space gave value to the wider practices associated with it. One local minister remarked that in the course of her work Iddlesleigh had become "one of my favourite churches, as you look out the door the vista is wonderful". In a similar vein, one speculated that a connection to a well-loved resting point was important: "it is interesting to see the cluster around Iddesleigh. There is a nice pub there. Would there still be so many dots there if the pub wasn't there? " This idea was corroborated to an extent by the open comments of the questionnaire survey (e.g. 'Iddesleigh – best view of Dartmoor. Idyllic pub', or again,'Iddlesleigh, the *Duke of York* [pub], stood outside on a summer's day with views of Dartmoor".

Other notable clusters of dots emerge. Concentrations of green tend to occur in spaces where roads cross streams and where footpaths and water are aligned. Pathways that connect a settlement with a larger setting, such as Hatherleigh Moor, were also emphasised. There were also small pockets of green along major footpaths. These are typically spaces associated with rest and recuperation. Their specificity is generally related to the special views associated with an environmental space, or spaces where a setting is unusual in some way, such as an orchard. Features of the natural environment were also often singled

out as resonating with people, particularly in the context of memorialisation. So for instance, "there is a special line of oak trees at the bottom of Hatherleigh Moor which was planted in memory of a young boy who lost his life, a teenager who was the son of our local vet at the time".

It is interesting to set this summary analysis against the assessment of red dots. Red dots provide a context to explore ideas of ecosystem dis-benefit. They carry negative sentiment, and as such as can be quite provocative for people where affirmative values are so strongly present. Indeed, for some, red dots contravene the idea of the area being an 'idyllic' place and some respondents could not bring themselves to undertake the task. In general, there were substantially more green dots placed on maps than red ones. Like green dots, marks in red can be associated with landscape and memory, but of a less positive ilk. The setting of Ash Moor, an important nature reserve in the area, was identified by some as a place of 'trauma'. This was because the site was prepared as a foot-and-mouth burial pit in 2001 by the Government, though it was never used (see Winter, 2003). One commented that, "I was a protester at the Ash Moor site during foot-and-mouth. I believe it is transformed and must bring myself to see this - then hopefully the red dot will turn green! ".

Other red dots related to environmental spaces contradict what a pleasurable experience of countryside should be. Sites of industrial heritage were often singled out in this way – a former quarry works in Meeth in particular ("ugly" and "run down") – but also natural settings, such as Beaford Moor. Unlike Hatherleigh Moor this is a 'Site of Special Scientific Interest' but it is also a space that divides opinion. One reflected in the survey that "Beaford moor always looks bleak. But how it could be made more pretty is difficult to fathom". In group discussion competing sentiments were offered:

R1 "It is also quite bleak there, it is very exposed and windswept, I would personally go to places with more woodlands".
R2 "I would agree, I have worked on Beaford Moor so I have had some experience of trudging over it in the winter and it is a bleak, howling place".
R3 "I quite like going through it though, you get wonderful skies and the weather is apparent there, there is something nice about going through it".

Overall, the process revealed that red dots tended to be associated with issues that threatened or challenged otherwise valued spaces, and hence both maps share similar patterns. These threats and challenges can reflect surface management issues: litter and dog excrement in particular. However, two more substantive issues stood out. The first of these issues related to access. Our survey revealed the way many locations in the case study were not felt to be 'legible'; people often did not know where to go, where particular places of potential interest were ("I didn't even know there was a wood at Beaford") and felt there was lack of accessible spaces due to property rights ("There is a lack of access along river banks due to private land"). Indeed, while the river Torridge landscape was valued highly as a natural feature of significance to people the discernible point was that access was restricted. One reflected that "You can go to any amount of river bank in urban areas and sit there but that is not the case here, there is hardly any access. Where you can walk beside it, you generally can't get down to it to let children paddle or whatever". Some areas of landscape were also not seen to be properly connected together by way of paths nor readily equipped with parking and stopping places.

The second key issue related to perceived current threats to an "unspoilt" landscape. In the survey we asked whether people felt the area was "changing for the better". One remarked in discussion that the question was a contradiction in terms "Only 8% think it is changing for the better? That's because the other 92% think it is wonderful, beautiful and doesn't need changing a great deal – you can't improve on perfection". This was a widely held view in group discussion and
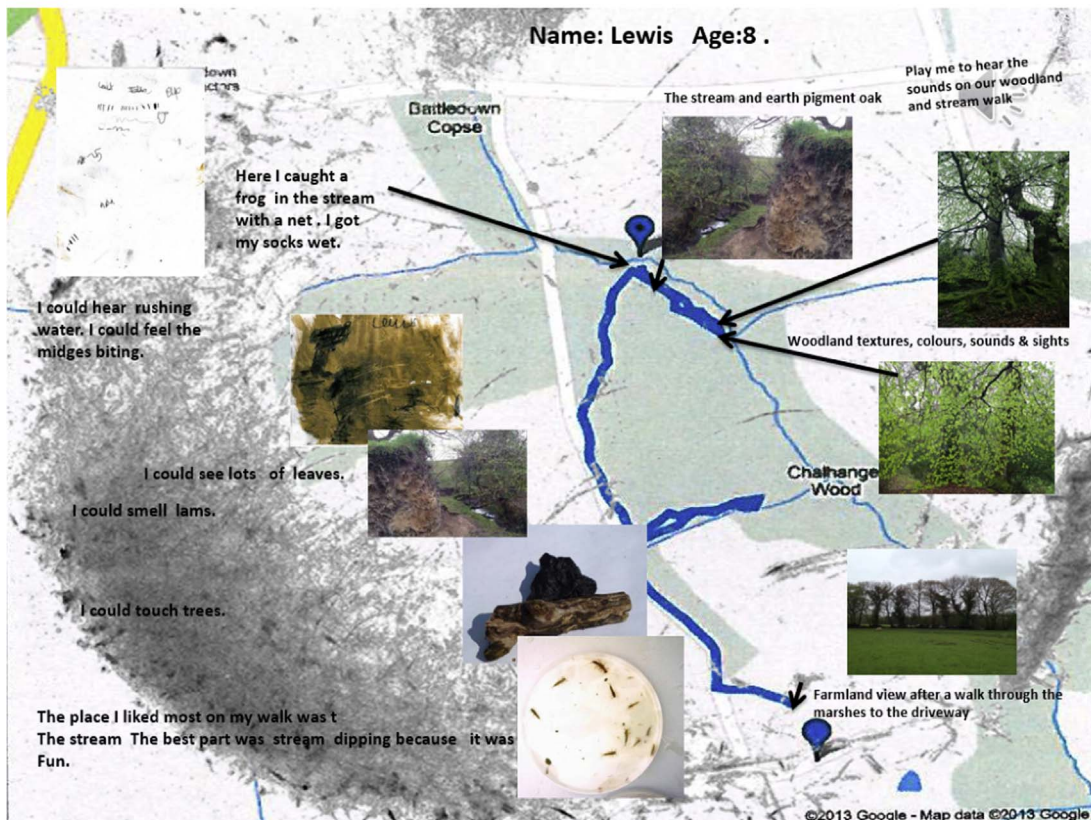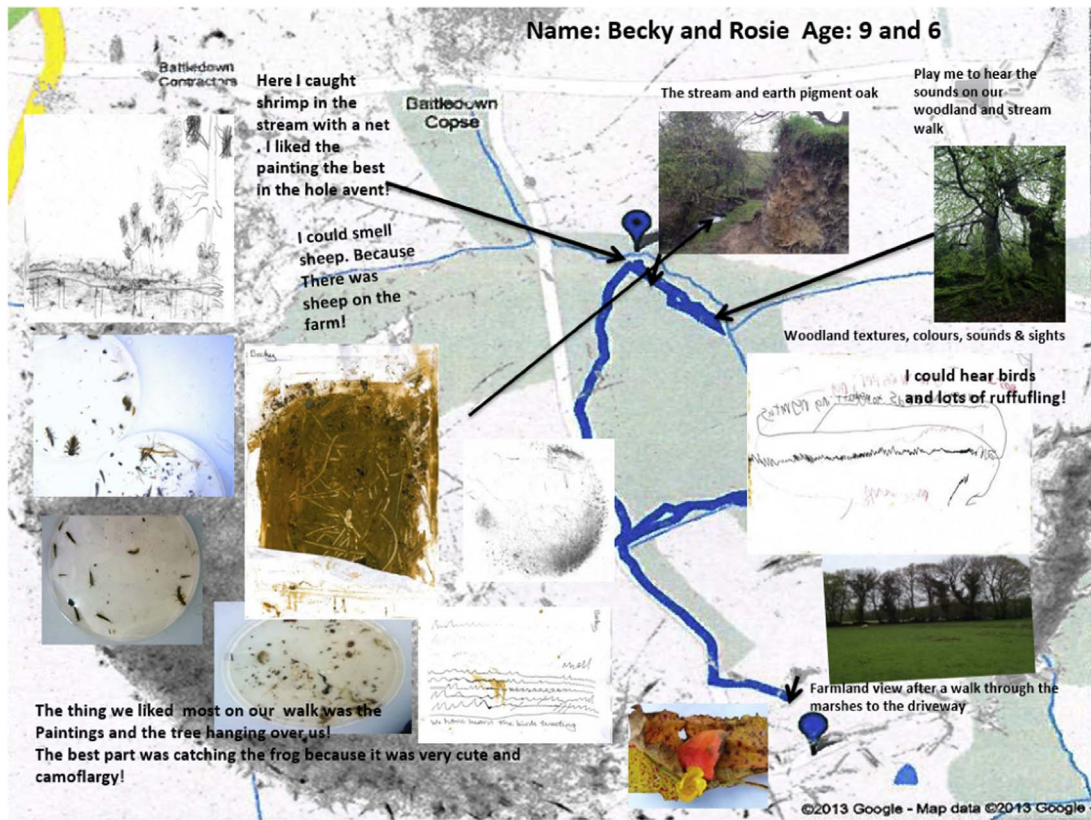
Fig. 6. Mapping sensory engagements in the NDNIA.

survey responses ("We don't want change, do we? ") and tended to translate into hostility to development in the landscape. This included hostility towards housing developments ("creeping development on the edges of Dolton and other villages. Extra traffic, ugly houses, visual impact on views back into the village") as well as hostility to developments that would contravene an area's scenic value, such as solar panels and wind farms ("I have no objection for individual turbines for individual use but this is not a place for a wind farm. Iddesleigh is an unspoilt village").

5.5. Mapping environmental space through cultural practice

These findings of the discussion groups can be contextualised further by those arising from the more visceral and embodied engagements of arts-based research. As explained in the methodology, such findings also take the form of mapping and marking an environmental space, but are distinguished by their production in, through and indeed with, the material space itself. Two examples of the maps produced are displayed in Fig. 6. These maps represent an accumulating narrative record of observations and movements around a space..

Like the maps that were marked by the questionnaire respondents, *a priori* cultural framings tacitly permeate participant responses to their world. The children had, for instance, already explored their environmental spaces through the valorised images of Ravilious, as part of the wider school curriculum. The activities also took place on Culm landscapes that were replete with shared cultural meanings to the children, since they were owned and farmed by (friends') parents and families. And in conducting this activity we learnt too from school leaders that, notwithstanding the valorising work of the NIA, these were environmental spaces shadowed by the known 'threat' of future housing development: a creeping narrative of change and loss analogous to the group discussion pervades the context in which these children grow and learn.

As an exercise in practical creative encounter, the creation of these maps arose from number of encounters along a choreographed route: children moved through woodland farmland and wetland habitats encountering flora and flora and built features. They stopped at vantage points to view the extended or enclosed landscape. Ultimately, they were invited to visually record and compose in a map form what they saw, heard, touch and smelt around them. The process was therefore close to a form of guided discovery learning, a cultural practice that edifies people through interactions with nature. Indeed, feedback from the participating schools indicates that working with children in this way had inspired the teachers to consider new and creative ways to respond to the environment and link this in directly into teaching programmes.

"It has given all the children a different perspective and view on both nature and art. They were all enthused and loved working in a different way to capture the senses around them, rather than just observational sketching. It really extended them to think, look, hear, smell and feel the environment."

Yet these techniques create their own understanding and vocabulary of the nature and meaning of human interactions with environmental space, the insights of which are useful to compare in the context of other findings. In Table 4, we display some indicative qualitative comments from the maps created by the children and those made in relation to the map issued alongside the adult questionnaire. We organise these around aspects of our framework: features of environmental space emphasised; the qualities used to describe them; the practices with which they are associated and the benefits stated in (or inferred from) comments.

The findings of both reveal complementarity in the way features are emphasised in peoples' encounters with environmental space: streams, trees, birds and the naming of species. The multisensory and activity based dimension of the arts-based approach, however, is interesting in the way children were encouraged to draw out the qualities of these spaces through listening and to reflect these in their representations of the environment (e.g. 'crackling', 'bustling', 'rustling', 'tweeting', 'ruffling', 'whistling'). The effect is to emphasise movement and ephemerality in the space over more generalised qualities found in the survey responses of adults (e.g. 'spectacular', 'timeless', 'tranquil', 'attractive', 'lush', 'haunting'). However, these different emphases and associations are articulated in the context of a range of similar practices - walking, drawing, fishing, drawing, painting '– around which we can begin understanding ideas of benefit among research subjects: this is a space of fun, excitement, lifting sprits, losing oneself, discovery, learning, awareness, serenity, happiness and memory.

The arts-based techniques, deployed here with children, might provide novel models for engaging wider audiences in the mapping of CES and their benefits. Yet our broader point and purpose here is that, in using a range of techniques spanning practical encounter, artefact creation and reflective survey we enrich and extend our qualitative understanding of each component of the CES framework. We might say the psycho-geographical arrangement of images, texts and drawing that define the visceral records of the children in this study are therefore important companions to the 'heat' map and landscape character assessment, and the social science survey, where the effect may be to overly formalise and regulate understanding of the cultural and how we answer fundamental questions of ecosystem service scholarship: what matters, where and why?

6. Discussion

6.1. Reflections on the utility of the framework

Rural areas are often understood to be strongly related to affirmative understandings of place and models of living (see for example Halfacree, 1995). Through the lens of cultural ecosystem services this NDNIA study has explored and tested this widely held view, providing insight into the way rural environmental spaces resonate as culturally

Table 4
Comparing adult and child interpretations of environmental space.

Component of framework	Creating an artefact:[Children: 6–10 year olds]	Marking a map[Adults: 16 years +]
Features of space emphasised	Stream and water, air, trees, leaves, bark, wood, sticks, grass, moss, mud, animals, creatures, sheep and lambs, birds, frogs, mayflys, midges, water spiders	Nature, fauna, wildlife, flora stream, lambs, deer, hare, birds, skylarks, hawks, wild primrose, wild flowers, views, scenery and southern marsh orchids, ponds daffodils
Qualities described	Crackling, bustling, rustling, tweeting, ruffuling, whistling, rushing, green, camoflargy, cute, fresh, wet, big, lots	Spacious, open, steep, wild, constantly changing, beautiful, delightful, pretty, unspoilt, spectacular, timeless, tranquil, attractive, lush, safe, haunting, ambiance, varied, diverse, plenty, amazing, wonderful, fantastic
Articulated Practices	Walking, painting, drawing, touching, fishing, dipping, catching, taking pictures	Walking, cycling, riding, running, exploring, spotting, photography, drawing, painting, exercising, talking, fishing, flying kites, picnicking
Benefit expressed/ inferred	Fun, discovery, excitement, exhilaration, awareness, learning	Fun, sense of peace, lifting sprits, losing yourself, serenity, happiness, memories, heritage, history, community, family, awareness, learning

important to people by way of the qualities, practices and benefits associated with them. We have learnt that this is an area considered to be enabled by nature, and members of the community indicate a variety of ways a relationship with, and understanding of, nature is important in their lives and to their well-being.

In general, the social science and arts-based techniques we deployed in this study served to reinforce understanding of the way these relationships are often associated with both generalize expressions of environmental space and particular areas and features within these. The questionnaire based element of the methodology was useful in pre-coding these into distinct areas of questioning, though the scale and generality at which people were ask to make judgements about their environment made the accompanying map and arts-based process important in clarify the link between environmental phenomena and benefits (and dis-benefits). The execution of the study reflects the difficult balance to be struck between, on the one hand, the general landscape scale ambitions of an NIA, and on the other, the logic of ecosystem assessment, where the need to draw out associations between particular spaces, practices and benefits is clearly key.

Research by Kenter (2016), make clear the difficulties here. They combine deliberative monetary valuation and a participatory mapping approach, and suggest that monetary valuation, deliberative or not, elicits ecosystem service values at a level of abstraction that cannot fully reflect idiosyncratic, place-based cultural benefits. They argue these need to be understood to make effective practical management decisions. Our use of mapping tools that start with simple positive and negative assessments of 'nearby nature' provide useful gateways into more elaborate qualitative treatments of cultural value; heuristics that can actually take research quite far in terms of identifying environmental spaces of cultural importance and concern for landscape scale approaches. An evolution of the approach taken here would look to test further these associations, with the creation of general heat maps helping to prioritise where these relationships should be observed more closely. The arts-based approach shows how this be might approached qualitatively.

To what extent we can further make empirical distinctions within and between the idea of benefit/dis-benefit is also interesting to reflect upon in the light of this study. We started the research from the concept of experiences, which has since been extended to make distinctions between experience, capabilities and identities, and this is partly the result of the different ways people articulated the significance of the study area in terms of responses on the map, group discussion and arts-based investigation. Yet making neat empirical distinctions here is difficult. These qualitative responses suggest that it is useful, at the very least, to think of positive and negative significations as 'bundles' of overlapping and interacting benefits/dis-benefits across particular spaces (See also Kenter, 2016; Raymond et al., 2009). We would suggest that making sense of these complex patterns and associations reinforces the need for qualitative research techniques that, alongside quantitative analytical techniques, help qualify and interpret the cultural significance of environmental spaces.

Finally, there remains a need to deepen the social and spatial profiling of cultural ecosystem services and the benefits that flow from them. The empirical research conducted in this project tells us something important about the range of values that cohere around rural land, but we acknowledge here that the insights of our assessment is constrained by the profile of our respondents. Exploring CES and benefits ultimately begs the question: services and benefits for whom? A more elaborate treatment would extend analysis across a much broader social and spatial profile, coupled to participatory assessments of change rooted in the critical interpretations of those presumed to benefit from them. Assessment of cultural ecosystem services starts from the position of a holistic approach, but it is easy to obscure the contested nature of countryside cultures (on the wider point of contestedness, see Cloke and Little, 1997).

6.2. Outcomes and influence of the research

The research conducted has led to a number of outcomes and impacts for the NDNIA and beyond. In terms of management goals, the findings served to reinforce NDNIA priorities for developing access to, as well as restoring spaces for, community recreation, which was partly how the research team's work was actively constructed by NIA. For example, in its report on progress, the Initiative highlighted that.

> "There is a distinct need for a 'base' in the NIA for educational and community activities, and Meeth Nature Reserve will provide some of this resource in the future. There may be further potential for some areas of common land in this respect" (Devon Wildlife Trust, 2015: 9).

The nature reserve, cited here is the space of trauma, identified in the discussion above. It is thus being actively re-imagined and re-created as a space of leisure and learning for the local community. The hidden, non-visible cultural story of this site now runs alongside a new, more affirmative, cultural narrative for engaging with nature. The constellation of qualitative and quantitative materials brought to bear upon this landscape through this study helped the NDNIA contextualize and make clear the case for this new reserve.

At a higher level of aggregation, the activities this research has helped inform and validate the NIA's national monitoring and reporting frameworks as indicators of cultural ecosystem change and impact: including the length of newly established footpaths; the areas of new wildlife space established for the community; and the number of people engaged. They thus assist delivery staff to point to the way cultural ecosystem service benefits are being actively propagated through investments in landscape-scale restoration projects, whilst acknowledging the socially contingent and space specific nature of these benefits. We might say a more ambitious approach to indicator development in the light of the conceptual framework would look to develop sophisticated treatments of the cultural dimension of interventions in the natural environment. For example, the management of access affects a variety of culturally defined attributes of ecosystems – such as ideas of beauty, tranquility and distinctiveness. Understanding how these attributes are sensitive to change is a logical extension of a narrowly defined indicator such as the 'length of a new wildlife space' and possible within the general parameters of the framework.

Other outcomes were not anticipated. The dynamic of arts-based enquiry into this research was partly received as an exercise in communication and engagement rather than an investigative tool. Yet it also had a generative effect on how creative processes are being used as a gateway in community dialogue over the future of this landscape, expanding well beyond the social contours of engagement with young children. In partnership with the NDNIA, members of the research team worked with Beaford Arts to help stage a nationally recognised production – entitled 'The Common' – which narrated the meaning of the Culm grasslands from an ecosystem services starting point of view, and specifically a scenario in which the shared environmental 'assets' of the NDNIA were being put to 'auction' (see Fig. 7.). This production was directly informed in consultation with local stakeholders including members of the research team. And notably, the production was surrounded with informal audience/public dialogue about the aims and priorities of the pilot NIA with partnership staff. 'The Common' production has since been staged in other NIA project areas, highlighting a scalability of approach and logic not anticipated by the research process itself. Devon Wildlife Trust (2015: 9) have argued that these approaches "show what can be done if the ecosystems approach is used creatively by a strong community organisation, bringing in new perspectives that develop the remit and the reach of the NIA".

7. Concluding remarks

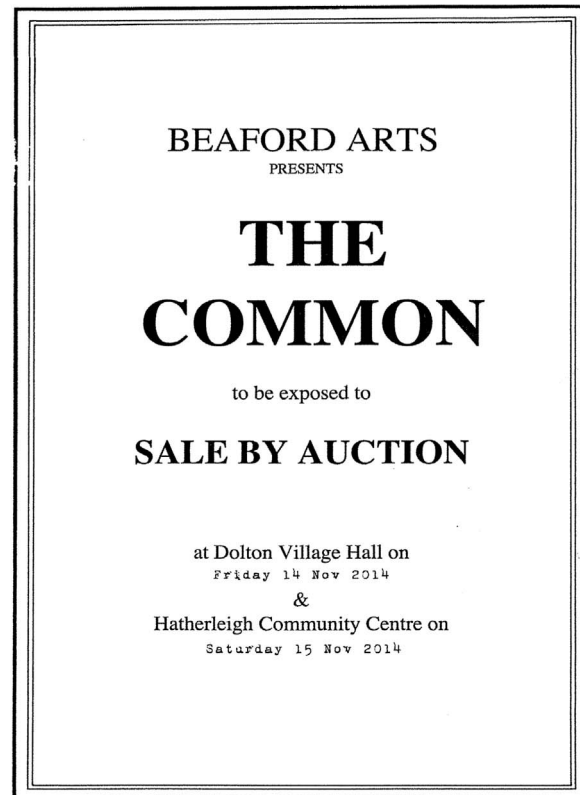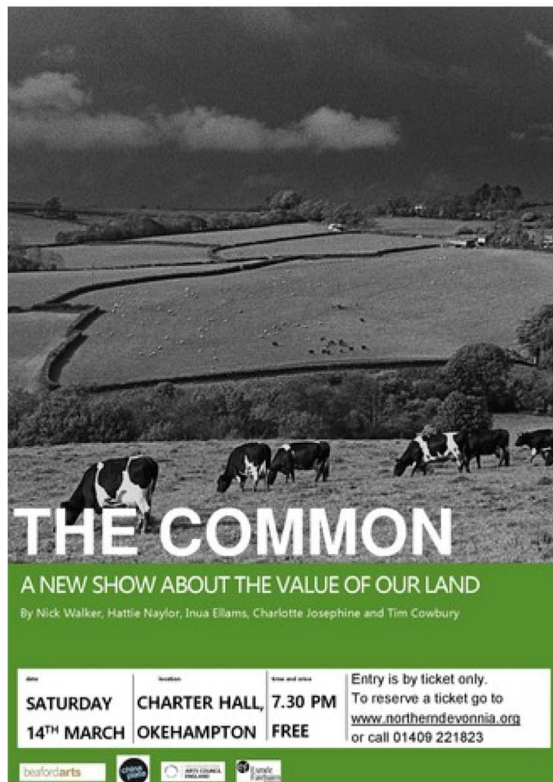The framework outlined and explored in this study is an invitation

Fig. 7. Dramatising cultural values of the NDNIA: the 'Common'.

to think more broadly about the way we source, create and test ideas about the cultural significance of ecosystems. This findings of the research help elaborate and point to pathways in the refinement of the methodologies, and methodological mixes, to help meet this challenge. In doing so, our endeavour should not be taken as an attempt to create fixed and objective readings of the 'cultural'. In the particular case of the NIA, the partnership is required to explore CES and benefits within its boundaries, but as we have suggested above these boundaries are themselves cultural frames, layered upon a whole series of other cultural frames – popular, scientific and institutional. The cultural dimension of ecosystem value does not exist purely in the thought and practices of local beneficiaries but, to reiterate, in a web of other cultural circuits that shape it. Part of the challenge facing CES is to understanding the many and diverse ways that culture is layered upon culture and to ensure that the assumptions that pervade 'our' understanding of these surveys always remain open to question and re-framing.

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