

<b>Institution: University of Essex</b>		
<b>Unit of Assessment: 24 - Sport and Exercise Sciences, Leisure and Tourism</b>		
<b>Title of case study: Transforming Green Exercise practice, strategy, funding and reach for vulnerable groups with complex needs</b>		
<b>Period when the underpinning research was undertaken: 2003 - 2020</b>		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Dr Jo Barton (née Peacock)	Reader, Sport & Exercise Science	2003 – Present
Prof Valerie Gladwell	Professor, Sport & Exercise Science	2000 – Present
Dr Michael Rogerson	Lecturer, Sport & Exercise Science	2015 – Present
<b>Period when the claimed impact occurred: 2014-2020</b>		
<b>Is this case study continued from a case study submitted in 2014? N</b>		
<b>1. Summary of the impact</b>		
<p>Essex Green Exercise (GE) researchers were the first to demonstrate that being active in nature led to significant improvements in mental health, especially amongst vulnerable cohorts with complex needs. This case study highlights examples where Essex research influenced the practice, strategy, funding and reach of UK charities and non-profit organisations, with resulting improvements in the health and wellbeing of their beneficiaries. GE researchers evaluated over sixty GE programmes. This has enabled organisations to deliver multiple iterations of improved programmes with greater funding opportunities to broaden their reach: number of participants, geographical spread and engage more diverse cohorts with complex needs. For example: the <b>Wilderness Foundation</b> built resilience in 647 vulnerable teenagers with complex mental health issues across the UK and Essex GE research has enabled them to be successful in 90% of all their funding applications; the <b>Wildlife Trusts</b> secured GBP550,000 funding enabling the provision of additional programmes to benefit the health and wellbeing of the general population and those with therapeutic needs; the evidence was used to influence changes in their strategic plans and provide robust evidence for advocacy work; <b>Future Roots</b>, a Dorset-based care-farming charity, secured GBP140,000 (their largest programme funding award in their history, representing 75% of their funding awarded across 2018–2020); and <b>ukactive</b> a leading national active lifestyle association altered their delivery and evaluation of Nationwide programmes.</p>		
<b>2. Underpinning research</b>		
<p>The Essex GE research group provides the evidence base to understand, inform and drive improvements in human health and wellbeing via interactions with the natural world. Essex is a pioneer in this area of research. In 2003, Essex coined the first use of the term “Green Exercise”, illustrating the potential health and wellbeing benefits of physical activity in natural environments. In 2005, Barton published the first quantitative controlled study comparing GE to urban exercise, demonstrating that GE showed greater improvements in well-being related measures such as self-esteem and mood [R1]. The measures were used in the co-production of work with the various organisations to replicate findings in real world practice to improve their delivery of evidence-based programmes, leading to further Essex GE research.</p> <p>In 2010 Barton performed the first multi-study analysis demonstrating the best dose of GE required for gaining health benefits, showing that participants with lower baseline wellbeing benefited the most [R2]. These research findings informed the design and delivery of nature-based interventions by Wilderness Foundation, Wildlife Trusts) and Future Roots. For example, projects were designed to target individuals with low wellbeing, as the evidence showed this would be a more effective approach. The research evidenced that individuals do not have to engage in rigorous intensive bouts of exercise to gain the mental health benefits, so this informed the type, frequency and duration of activities offered in the respective interventions. This led to several studies published from 2012-2020 directly utilising GE to engage vulnerable cohorts - such as adults with mental ill-health and youth at risk - and evidencing the effectiveness of these approaches in supporting recovery from mental ill-health and influencing future positive behavioural choices [R3, R4, R5]. This research underpinned the development of bespoke programmes for young people or adults who are harder to reach and the targeted recruitment of participants who are not already using green spaces for therapeutic purposes (Wilderness</p>		

Foundation, Wildlife Trust and Future Roots). Wilderness Foundation developed a successful bespoke marketing campaign to recruit more girls to their programmes due to the research findings reporting larger improvements in females' self-esteem.

In 2016, the Essex GE researchers showed that social interaction time was significantly greater during outdoors exercise versus indoors exercise of identical intensity [R6], demonstrating the additional psychosocial benefits of GE over other forms of exercise. The Wilderness Foundation, The Wildlife Trusts & Future Roots designed group-based programmes to facilitate connections to each other as well as nature. As the research also reported that social interaction time significantly predicted intention to exercise outdoors, The Wilderness Foundation, The Wildlife Trusts & Future Roots programmes monitored attendance and engagement over a longer time frame to assess the impact of any sustained health benefits. In total, seventeen evaluative reports have been produced and shared with organisations (2014-2020). The quality of this research was demonstrated by its publication in academic outputs; for example, [R5] encompasses key results from a number of these reports. Reflecting the continuous cycle of iterative influence on developing delivery and practice, [R4] was co-produced with the Wilderness Foundation.

### 3. References to the research [can be supplied by HEI on request]

- R1** Pretty, J., Peacock, J., Sellens M and Griffin, M. (2005) The mental and physical health outcomes of green exercise. *Int. J. Environ. Health Res* 15: 319-337 (<https://doi.org/10.1080/09603120500155963>). .
- R2** Barton, J. and Pretty, J. (2010) What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environ. Sci. Technol.* 44, 3947-3955. (<https://pubs.acs.org/doi/10.1021/es903183r>).
- R3** Barton, J., M. Griffin and Pretty, J. (2012) Exercise, nature and socially interactive based initiatives improve mood and self-esteem in the clinical population. *Perspect. Public Health* 132, 89-96. (<https://doi.org/10.1177/1757913910393862>).
- R4** Barton, J., Bragg, R., Pretty J., Roberts, J., and Wood C. (2016) The wilderness expedition: An effective life course intervention to improve young people's well-being and connectedness to nature. *J. Exp. Educ.* 39: 59-72 (<https://doi.org/10.1177/1053825915626933>).
- R5** Rogerson, M., Wood, C., Pretty, J., Schoenmakers, P., Bloomfield, D. and Barton, J. (2020) Regular Doses of Nature: The Efficacy of Green Exercise Interventions for Mental Wellbeing *Int. J. Environ. Res. Public Health* 17, 1526. (<https://doi.org/10.3390/ijerph17051526>).
- R6** Rogerson, M., Gladwell, V. F., Gallagher, D. J. and Barton, J. (2016). Influences of Green Outdoors versus Indoors Environmental Settings on Psychological and Social Outcomes of Controlled Exercise. *Int. J. Environ. Res. Public Health* 13, 363. (<https://doi.org/10.3390/ijerph13040363>).
- G1** Green Exercise - ukactive, ESRC IAA Secondment, 1/6 - 1/12 2016, GBP12,668 (Rogerson).

### 4. Details of the impact

Essex GE research has had widespread impact on many organisations since 2014, however this case study focuses specifically on **four organisations (Wilderness Foundation, The Wildlife Trust, Future Roots and ukactive)** which provide illustrative examples of where Essex GE research has directly:

- improved the health and wellbeing of individuals, including vulnerable adolescents and adults with mental health needs
- influenced the delivery of services by changing the strategy, policy and systems of charitable and other organisations enabling them to increase the reach of their health and wellbeing activities by raising more grant income
- provided a robust evidence base for advocacy work

#### A. Wilderness Foundation (improving wellbeing and influencing a charity) [S1, S2]

The Wilderness Foundation is a UK charity engaging over 6,000 people per year with the benefits and enjoyment of wild nature. Their programmes develop future sustainability leaders, build resilience in vulnerable teenagers with challenging lives and mental health issues, introduce rural employment to urban youth, and bring curriculum-based sciences to life in the outdoors. The Wilderness Foundation has “*always focussed on harnessing the positive power of wilderness to change lives but wanted to evidence this using a rigorous approach to their analysis*” CEO,

Wilderness Foundation [S1]. Since 2005 they have had a long-standing relationship with Essex GE researchers. *“Before then the benefits of nature were often taken for granted by organisations; they lacked scientific basis and evaluation. Essex’s GE research programme was, however, starting to address this”* [S1, R1].

Throughout 2014-2020, **three Wilderness Foundation** programmes were directly underpinned and dependent on Essex GE research: i) **TurnAround**, ii) **Out There Academy** and iii) **Imbewu Scotland** [S1]. *“Essex GE research was instrumental in helping us pre-frame those programmes. For instance, ensuring that we were able to measure the benefits rigorously, rather than relying on a few verbal analyses. We worked really closely on developing frameworks that were measurable, without losing the human, soft benefit of the programme, to help forge the programmes and deliver them more effectively.”* [S2, p10]: *“We believe that this level of analysis is a key component of the success of TurnAround [...]. The evaluation also provides strong evidence to demonstrate the true value of investing in some remarkable young people”*. Furthermore, *“Essex GE research and rigorous evaluation process did not just inform the charity’s goals; it enabled them to be funded.[...] Approximately 50% of the Wilderness Foundation’s overall income, which includes grants and activities, could not have been secured without University of Essex evidence”* adding that the research was *“essential for securing 90% of the applications we have gone for”* including from the Dulverton Trust for TurnAround and Scottish Natural Heritage for Imbewu [S1] and Wilderness Foundation *“being chosen by The Duke and Duchess of Sussex as one of only 7 charities worldwide to receive donations from the public in place of wedding gifts”* (2018) [S1].

The evaluation also informed and altered Wilderness Foundation’s offering *“from the evaluations of the TurnAround project we realised we were effective for 16-21 year olds with complex needs but questioned what we could do on a preventative basis. In 2014, we founded the Out There Academy for 13-15 year olds with significant behavioural and emotional difficulties. Essex GE researchers then undertook the evaluations of subsequent iterations of the programme which shaped its development. Alongside this we developed Imbewu, an off-shoot of TurnAround, but working with young people in inner city Scotland. We used a lot of the same methods developed in collaboration with Essex GE research, but for different outcomes: employability, wellbeing and ecological inheritance awareness.”* [S1].

TurnAround and the Out There Academy take referrals from Essex County Council Youth Services, Essex Youth Mental Health Services, Family Solutions, Pastoral teachers at schools, alongside Hackney virtual school, Harlow referral unit and others. Initially based in mid Essex, geographical spread of participants increased between 2014-2020 to cover all of Essex and further afield to the South-East and London. Wilderness Foundation successfully recruited young people with complex needs, including those hardest to reach with significant issues [S1]. *“Imbewu has received referrals from over 40 schools from Aberdeenshire, Perth, Fife, Glasgow, Falkirk, Dumfries and Galloway and South Lanarkshire”* [S1]. The projects have now also increased engagement due to changes informed by evidence. *“Prior to 2013 the percentage of TurnAround graduates re-entering education, training or employment was 85%. In the most recent iterations of the programme (2014-2020) 100% of graduates re-entered education, training or employment. They were also the most successful group ever in terms of project engagement, even though this cohort represented the most challenging group of young people to date (with mental health issues, and all starting out NEET i.e. Not in Education, Employment, or Training)”* [S1]. Overall, in 2014-2020, these projects enhanced the wellbeing of 647 of some of the most vulnerable and difficult to engage with children across the UK [S1].

The evaluation framework designed by Essex for the TurnAround project has been adopted internationally in Slovakia, Hungary (2017), Poland, Czech Republic (2018), Germany (2019) and Oman (2020). *“These respective institutions approached us to receive training to deliver wilderness therapy projects based on TurnAround methodology, due primarily to Essex GE research”* [S1]. There was also *“significant sharing”* of collaborative work with Essex at the Wilderness Foundation’s World Wilderness congresses; *“Due to the Essex GE research we were key in coordinating the social benefits programme at the last big congress in Salamanca. The Wilderness Foundation Africa benefitted from that alongside Go Wild in America”* [S1]. Essex GE research enabled Wilderness Foundation *“to evidence their benefits and thereby secure the funding needed to continue. This, together with the broader body of Essex GE research had a profound effect on the Wilderness Foundation’s activities throughout the UK and parts of Europe as well as in South Africa”* [S1].



**B. The Wildlife Trusts (improving wellbeing and influencing a charity) [S3]**

The Wildlife Trusts is a UK grassroots movement with over 850,000 members, 38,000 volunteers, 2,000 staff and 600 trustees. Each Wildlife Trust (46 Trusts) is an independent charity aiming to provide a range of benefits for both the health and wellbeing of the public and those with diagnosed therapeutic needs. Essex GE researchers were commissioned [S3] to write 3 scientific reports for The Wildlife Trusts (2015-2017), and the data was subsequently published [R5]. The research directly demonstrated the health and wellbeing benefits of these Wildlife Trust activities. The Wildlife Trusts' Head of Health and Education states that the *"research was a game changer, enabling both the Wildlife Trusts as a whole and individual Wildlife Trusts, together with their partners and service users, to achieve results through improving evidence, advocacy work, policy and practice in nature-based interventions for health and wellbeing which had hitherto not been possible and would not otherwise have been achieved"* [S3]

Essex reports, especially the evaluation of The Wildlife Trusts' volunteering programmes [S3] played a pivotal role in increasing funding for new Wildlife Trusts programmes (e.g. Lancashire, Kent, Devon, and Cheshire) leveraging over GBP550,000 from a range of sources and funders to support their valuable work, increasing the reach and geographical spread of the programmes, and specifically improving access by vulnerable adults. *"It has been an extremely valuable resource which is referred to often". "Kent Wildlife Trust's Head of People Engagement has used the research as evidence within funding bids (e.g. Big Lottery Fund, Sport England)"* [S3]. Lancashire Wildlife Trust used the research in all their new funding bids and *"it was highly referenced in their successful Building Connections bid (Government Loneliness Fund)"* receiving GBP99,907, with Kent Wildlife Trust also receiving GBP99,850 from the same fund. Further, Wildlife Trusts also received funding from Sport England's Opportunities Fund: Kent (GBP149,290), Cheshire (GBP143,123), and Devon in partnership with Active Devon (GBP150,000). Additionally, *"in 2020, Cheshire Wildlife Trust were awarded a further GBP50,000 from Sport England to explore the feasibility of scaling the work that they originally funded. In December 2020, Sport England confirmed that Cheshire Wildlife Trust's plans were merited further financial support of up to GBP200,000 to continue this work."* [S3]. Further, *"it has also been very useful evidence in presentations to other organisations – mostly voluntary organisations working for social benefit"* [S3]. In the national context, The Wildlife Trusts highlight *"In December 2020, The Government announced the seven successful demonstration sites for the national Green Prescribing for Mental Health programme. Local Wildlife Trusts are involved in all seven sites"* [S3].

Essex's work shaped Wildlife Trust's programmes supporting evidence-based practice, improving evaluation and delivery. A Senior Transformation manager at Lancashire Care NHS Foundation Trust stated, via [S3]: *"The research was valuable as it added credibility along with various timescales (i.e. 6 weeks and 12 weeks) by which people could start to see the benefits – This was important, as although most people would intuitively understand the benefits of engaging with Nature, there was very little evidence that would support this claim. Therefore the University of Essex provides this – which is important to clinicians as they operate on an evidential basis."*

Essex research influenced the policy and strategic plans of The Wildlife Trust: *"The University of Essex's research was hugely influential in the development of The Wildlife Trust's health and wellbeing strategy. The strategy's framework is in those three pillars of everyday life, health promotion and green care as set out in the Essex reports [...]. Essex's 2017 report provided the evidence for development and implementation of the strategy"* [S3]. It has also been used in The Wildlife Trust's advocacy work *"Essex's 2017 report was our primary source of credible, independent, unequivocal evidence. [...] in The Wildlife Trust's advocacy work with DEFRA and with the Department of Culture, Media and Sport. The report and other work by the GE research team also provided the evidence for The Wildlife Trust's response to the Government's 25 Year Environment Plan (February 2018). We also used the report in meetings when the plan was developed."* [S3]

**C. Future Roots (improving wellbeing and influencing a charity) [S4]**

Future Roots runs charitable programmes in Dorset aiming to harness the therapeutic potential of farming practices (care-farming). Their 'Countrymen's Club' addresses the specific challenges faced by older men (with dementia, depression or long-term illness) from rural communities aiming to improve their resilience to life changes experienced as a result of isolation and ageing. Essex research [R2, R3] was pivotal to the success of this programme, via Essex's evaluation report

creating positive developments for Future Roots as their Director [S4] explains: *“Firstly, we changed our own practice in line with some of the recommendations made in the January 2017 report (p48); namely that we now collect a consistent set of data at the point of referral, track attendance, engagement and outcomes, and use a web-based software management tool. This and the January 2017 evaluation report were critical factors in our ability to obtain further funding that has enabled a significant up scaling of our work with rural men. For instance, in Spring 2018, we were awarded GBP 140K by The Big Lottery Fund to run our Countrymen UK social franchising project”. This was their largest award to date. “We believe that our ability to evidence the efficacy of our original Countrymen’s Club project, via Essex’s report, and our own improved practices in line with its recommendations, were critical components that led to our Countrymen UK application’s success; feedback from the Big Lottery Fund indicated it to be highly unlikely that we would have achieved such a high level of funding to enable a UK-wide social franchising of our programme, without it. This GBP 140K represents 75% of our funding awarded across the 2018–2020 financial years” [S4]. Overall, Essex GE research “enhanced the rigour of our practice in terms of data monitoring and evaluation, led to an increase in our service provision’ and ‘the evidence from the University of Essex is now used in all of our funding applications” [S4].*

#### **D. ukactive (directly influencing the work of this not-for-profit organisation) [S5]**

Representing over 4,000 members, across public, private and third sectors, from multinationals to local voluntary community groups, ukactive aim to improve the health of the nation by promoting active lifestyles. They achieve this by facilitating high impact partnerships and championing innovation [S1]. Essex GE research enhanced ukactive’s projects and evaluation approach via Rogerson’s secondment [G1] (48 days from August 2016) [S5]. E.g. by informing *“the measures that were used to examine changes in health and wellbeing, and how to analyse the data”* CEO, ukactive [S5]. *“Regular meetings ensured an excellent partnership between the GE researchers and ukactive. Many of the programmes administered and evaluated by the ukactive Research Institute are real-world examples of GE in practice, so to have continual input from the GE researchers, into all aspects of our work with those programmes, has been of great value” [S5]. ukactive adds: “Individual members of the ukactive Research Institute, and thereby the Institute overall has been directly influenced and learned from discussions with Rogerson regarding the design and analysis of specific pieces of research monitoring and evaluation that we have undertaken during the secondment. Examples of this include our work with [gym designers and natural fitness coaches] BioFit and our on-going work with Coca Cola’s ParkLives programme”.*

For the BioFit evaluation project, ukactive included a measure of directed attention based on [R6] and *“This subsequently informed the data collection processes developed with England Golf, Active Bucks, and ParkLives” [S5]. ParkLives itself is a major UK wide health and wellbeing programme (a Coca Cola initiative). The data collection design informed ukactive’s evaluation programme for this project – “the measures collected and when to collect them - were chosen in line with these insights which were directly informed by the Essex GE published works [R6] Rogerson led our conversations with Coca-Cola on these matters, and his insight was presented to each of the participating Local Authorities and as part of the training provided to session leaders.” [S5]. “Having the insight of the GE researchers was important to the continuation of ukactive’s partnership with ParkLives. Indeed, without that expertise, the likelihood of this and the resulting successful implementation of ParkLives programmes across the UK would have been reduced.” [S5]. The same research [R6] “informed the design of the NHS [Royal Free Hospital] intervention for the wellbeing of NHS psoriasis patients” and “has influenced the decision of England Golf to fund the development of a ‘Golf on Referral’ pathway in 2017” [S5].*

#### **5. Sources to corroborate the impact**

[S1] CEO, Wilderness Foundation UK

[S2] Wilderness Foundation UK Report and Accounts 31 December 2016

[S3] Head of Health and Education, The Wildlife Trusts

[S4] Director, Future Roots

[S5] CEO, ukactive