Institution: University of East Anglia		
Unit of Assessment: 28 - History		
Title of case study: Orchards East – Preserving and Enhancing the Orchard Heritage of Eastern England		
Period when the underpinning research was undertaken: Between 2012 and 2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Professor Tom Williamson	Professor of Landscape History	1988 - to present
Period when the claimed impact occurred: Between September 2013 and 2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact

Orchards were for centuries an important part of the landscape, but their numbers have declined drastically since the 1950s. Our project has worked both to arrest this decline and to increase public awareness of orchards as a natural heritage resource making a vital contribution to biodiversity. Having traced their history, we recruited 750 volunteers to undertake citizen science. In some cases, the volunteers were trained in mapping, surveying, and archival research, in others in pruning, grafting, and other traditional skills. With their help, we supervised the planting of 55 orchards of more than 1000 new trees, the compilation of a comprehensive biodiversity survey, the DNA sequencing of fruit types, and the first proper assessment of the benefits that orchard habitats confer. Volunteers (including schoolchildren) were taught the importance of orchards, the skills required to maintain them, and the dietary benefits of eating fruit. A programme of more than 50 training or other workshops, including apple identification days, schools-outreach, public lectures, a cookbook, and culinary-skills sessions, spread knowledge of orchard management and the message that traditional varieties can be used to produce healthy meals. In the process, important scientific information was gathered and disseminated. The environment and natural heritage were protected. All of this with attendant benefits for ecology, biodiversity, social cohesion, public understanding, physical and mental well-being, and the protection of endangered species nationally and internationally.

2. Underpinning Research

Williamson heads the Landscape Group in UEA's School of History and is internationally renowned for his research on agricultural history, medieval field systems, and designed landscapes (parks and gardens). He is also famed for his ability to build and work with teams. His interest in orchards, first signalled in 2012, grew out of these broad intellectual concerns. Williamson's interest in trees is longstanding. From 2003, working with Gerry Barnes MBE (formerly Norfolk County Council Chief Environmental Officer and Chair of the Forestry Commission Regional Advisory Board), he researched what became their revisionist 2015 monograph *Rethinking Ancient Woodland* (**3.1**). In 2014, in the wake of mounting public concern about ash dieback, Williamson was funded by the AHRC and DEFRA (Department of the Environment, Food and Rural Affairs) to investigate the history of tree management and disease (**3.7**). The project employed two Research Assistants (Barnes and Toby Pillatt) and produced a comprehensive report for DEFRA (**3.2**). The results of this research were published in articles and in the widely acclaimed *Trees in England* (**3.3**), which received the 2018 Woodlands Award 'Book of the Year' award and was described in the *Economic History Review* (2019) as *'likely to remain one of the keystones in understanding the English landscape'*. In tandem with this interest in trees and woodland, and foundational to his project to publicise and reverse the decline in orchards, Williamson's work extended to a more general consideration of the character of the 'natural' in long-settled regions, as explored in his *An Environmental History of Wildlife in England* (2013) and in articles jointly written with leading ecologists (most notably, Fuller *et al.*, **3.4**). This, and the relative biodiversity benefits delivered by landscape features such as orchards managed on

'traditional' lines, as opposed to 're-wilding' – a key ongoing debate in environmental policy – were the subjects of his 2017 Colin Matthew Lecture for the Royal Historical Society (**3.5**).

Orchards are collections of old and often rare varieties of fruit tree. Until Williamson's work, they had received little or no serious attention from historians. The trees themselves take 15 years or more to reach maturity, veteranize after 50 years or so, and can continue to live for upwards of 120 years. They supply important habitats, especially for certain key invertebrates, yet were always intensively managed and highly artificial in character. Since the early Middle Ages, they have had a vital economic role besides carrying a range of symbolic meanings and forming important elements of historic landscape design. Working with Barnes, Williamson obtained funding from Norfolk County Council to employ Landscape Group researcher Patsy Dallas to undertake a systematic programme of research into the history of orchards in Norfolk. This led to a report for the Norfolk Biodiversity Partnership and Norfolk County Council and to an article published in the journal *Landscapes* (Dallas *et al.,* **3.6**) which discussed the hundreds of species of fruit grown before 1900, their geographical distribution, and the design ideas of local gardeners.

The article came to the attention of orchard enthusiasts, delighted at last to discover a degree of common ground with academic specialists. This led to Williamson's proposal for a substantial project, based at UEA, working with a range of partners to study and enhance the orchard heritage of the six modern counties of Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk, and Suffolk. Financial support was obtained from the Heritage Lottery Fund, and the project, 'Orchards East', was launched in 2017 (**3.8**), supervised by Williamson and Rowena Burgess (a social historian attached to UEA's Landscape Group), and employing a Project Officer (Howard Jones) and a part-time Volunteer Co-ordinator (Genevieve Broad).

Our initial aims were: (1) To survey and disseminate understanding of the region's orchard heritage and ecology, and (2) To enhance the orchard heritage, by planting new community orchards (using traditional, vigorous rootstocks); by providing training courses in orchard skills, including pruning and grafting; by educating the public in the importance of orchards; and by encouraging the cultivation of traditional and often endangered varieties through workshops showing how these can be used to provide healthy meals.

The two aspects of the project were intimately related. For example, our research, initiated before but enhanced through the project, informed the choice of trees planted (mostly apples, but with some pears, plums and heritage fruit such as medlars), the kinds of rootstock to be used, and the ways in which these new orchards are to be managed into the future. As a result of the COVID-19 pandemic, the original project funding, for three years, was extended by the Heritage Lottery Fund, amidst major disruption to our timetable but without seriously impairing the achievement of our principal goals.

3. References to the research:

3.1 Rethinking Ancient Woodland: the archaeology and history of woods in Norfolk
G, Barnes and **T, Williamson.**
University of Hertfordshire Press, (**2015**). ISBN 978-1-909291-58-4

3.2 The History of Tree Health and Tree Populations in England since c.1550
T, Williamson, G, Barnes and **T, Pillatt.** (**2017**) (Held on file at UEA)
randd.defra.gov.uk/Document.aspx?Document=14677_TH0140_final_report_v2.pdf

3.3 Trees in England: Management and Disease Since 1600
T, Williamson, **G, Barnes** and T, Pillatt.
University of Hertfordshire Press, (**2017**). ISBN 978-1-909291-96

3.4 Human Activities and Biodiversity Opportunities in Pre-Industrial Cultural Landscapes: Relevance to Conservation
R, Fuller, **T, Williamson**, **P, Dolman** and **G, Barnes.**
Journal of Applied Ecology 54:2 (**2017**), pp.459-469. DOI: 10.1111/1365-2664.12762

3.5 'How Natural is Natural? Historical Perspectives on Wildlife and the Environment in England' (the Colin Matthew Lecture 2018)
T, Williamson.

Transactions of the Royal Historical Society, 29 (**2019**), pp. 293-311. (Transcript held on file at UEA) gresham.ac.uk/lectures-and-events/historical-wildlife-environment-england

3.6 Orchards in the Landscape: A Norfolk Case Study
P, Dallas, **G, Barnes** and **T, Williamson.**
Landscapes 16:1 (**2015**), pp.26-43. DOI: 10.1179/1466203515Z.00000000039

Grants

3.7 PI: **T, Williamson**. Project: *Tree Health and the Structure of Rural tree Populations in England, c 1550-2015*. Project dates: 2014-2016. Funder: AHRC and DEFRA. Grant value: GBP230,675

3.8 PI: **T, Williamson**. Project: *Orchards East*. Project dates: 2017-2021. Funder: Heritage Lottery Fund. Grant value: GBP477,712.

4. Details of the Impact

Through its combination of academic research, 'citizen science', educational activities, and planting programmes, Orchards East has had multiple and far-reaching impacts, sustainable for decades to come. With partners including the National Trust, the People's Trust for Endangered Species, and several wildlife trusts (**5.9**)**,** we brought together the too often dislocated needs and ambitions of professional historians, scientists, cultivators, officials and public bodies, ecologists, local businesses, and the wider community. The outcome was a truly interdisciplinary venture, permanently enhancing both natural and cultural heritage, beautifying the locations in which we worked, protecting and, so far as possible, arresting decline of an endangered environment, and spreading best practice and historical understanding to the widest possible constituency.

Planting: With volunteers and partners, we planted 55 new orchards, each designed (following our research) to feature varieties associated with the localities in question (see list on file **5.9**). These are grafted onto the kinds of vigorous and long-lived rootstocks which we now know serve to maximise biodiversity. All told, 735 new trees were planted directly by the project and our volunteers, with at least a further 300 planted in partnership with 26 local organisations. Each new orchard has been provided with an authoritative, but accessible, information board, combining historical, scientific, and local community knowledge. Sixteen of the orchards were in the grounds of schools and 25 were new community ventures, situated in both urban and rural locations (including two in Luton). A further three were showcase collections, presenting a full range of local varieties, including that at Stowmarket Museum of East Anglian Life intended as a complete 'East Anglian collection' (50 trees). There (according to the Museum Director), the project *'turned semi-derelict ground into something of which we are extremely proud … educat(ing) the community about the connections between food production, heritage and health for many years to come'*, all of this as *'a major first step'* on their road to becoming a Food Museum (**5.1**).

The remainder were planted at institutions or for community organisations, including, with the active participation of inmates, five prisons (HMP Wayland, HMP Highpoint, HMP Warren Hill, HMP Hollesley Bay, HMP Whitemoor). The groups and communities involved have been universally appreciative. At Chatteris, for instance, *'the number of people visiting … has been beyond our dreams and we have had praise and thanks on social media for providing such a welcome addition to the open space in the town'*, especially during the long and difficult months of COVID-19 lockdown (**5.2a**). At Middleton, children of the local nursery school now tend the trees as *'a focal point to the village'* (**5.2b**), and at Ipswich (**5.2c**) the orchard is considered *'absolutely wonderful'*. At Swavesey, 100 residents gathered to plant 40 new trees and have since gone on to form their own association to tend the orchard for the future and to care for the 44 species of plant so far identified within it (**5.2d**). At Langford, not only is the new orchard seen as an important link to the village's past but as a resource fostering both social cohesion and natural beauty (**5.2e**). At Harpenden, '*nearly all*' of the 60 children who planted the trees described this as *'the most interesting thing'* they had done in science that year, with the new trees now *'a little symbol of hope for the community during this difficult time'* (**5.2f**). At Luton, amidst one of the most deprived communities in eastern England, the 20 new trees *'have been a major contributing factor'* in establishing a local conservation group (**5.2g**).

Skills Training: Pruning, Grafting, and Cooking: A total of 45 fully booked orchard management workshops/training sessions were held, mainly attended by members of the public but with some targeted specifically at professional arborists ('training the trainers') and staff from the National Trust, county wildlife trusts, and similar bodies. These served to disseminate what our research has revealed as the practices shaping 'traditional' orchards and maximising their importance as habitats. The various sessions were attended by a total of 599 people, ranging in age from 16 to 83. Volunteers, working together with nine professional arborists and 28 orchard experts, were trained in pruning, grafting, and other traditional skills required for the long-term sustainability of the project's plantings. Benefits here include continued knowledge transfer through the establishment of new community associations. As reported by the Lead Advisor of Natural England (**5.3**), the training sessions were particularly productive both for beginners and professionals, with the project's initiative overall of *'major and lasting impact'*. The character of Orchard East's input is neatly summarised by the Director of the Museum of East Anglian Life: *'The support helped us on so many different levels … with the expertise to be able to choose what to plant, how to plant it and how to protect it. The project team also helped us produce interpretation for visitors'* (**5.1**).

Ten workshops, run by food historian Monica Askey, were organised to demonstrate how fruit in general – and traditional varieties in particular – can be used to create cheap and nutritious meals with a low carbon footprint. These were targeted at organisations dealing with the disadvantaged and marginalised, including the Grow Organisation in Norwich, a social enterprise offering interaction and support to Forces veterans and people recovering from mental illness; Darwin Nurseries, Cambridge, a centre for adults with learning difficulties and mental health challenges; St Elizabeth's Centre for young epileptics, Much Hadham, Hertfordshire; and The Feed, Norwich, a social hub and café providing services and support for people who face barriers to employment. Wider dissemination of the key concept – that culinary practises, health, orchard conservation and heritage are inextricably linked – was achieved through the publication of a 100-page book by Askey and Williamson, *Orchard Recipes from Eastern England: Landscape, Fruit and Heritage* (Lowestoft 2020), described by the British Association of Local History reviewer as *'engagingly written and beautifully illustrated'* (**5.10**). The project also prepared lesson plans and other educational resources, available for download from the project website, now shared internationally via the Countryside Classroom platform countrysideclassroom.org.uk, connecting schools and teachers around the English-speaking world with food, farming, and the natural environment.

Surveys and Conservation: Supported by professional arborists and orchard managers, just over 150 volunteer surveyors (equipped with maps prepared by the county Biological Records Centres) examined 10,134 orchard sites in the eastern counties, recording what kinds of land use have replaced those which have been destroyed and the principal features of those that remain. The results have been digitised and, together with our biodiversity reports, form the basis of our 'State of the Orchards' survey for submission to County Councils and conservation bodies (together with the digitised data in GIS format) for use as a conservation management tool by County Biodiversity Centres. The overall results make uncomfortable reading. Nearly 90 per cent of the orchards present in 1960 have been grubbed up. A key finding here was that orchards were already in significant decline long before the UK's 1973 accession to the European Economic Community: a point of no little political significance, given the rhetoric deployed by those inclined to blame 'Europe' for such decline.

Sample orchards were subject to detailed biodiversity surveys, mainly carried out by professional consultants, with some volunteer participation. These have revealed the critical importance of orchard habitat for a range of species but, above all, for saproxylic invertebrates, bryophytes, and lichens. The survey results, according to Norfolk County Council's Biodiversity Officer (**5.4**), have *'transformed our understanding of orchard heritage',* mapping and recording *'a habitat of principal importance under section 41 of the Natural Environment and Rural Communities Act (2006)'*, likely to prove crucial to all future *'evidence-based planning and wildlife conservation decisions';* with additional *'untold social and community benefits'*. The scientific benefits extend beyond local to truly international significance. As reported by the Orchards Biodiversity Officer of the People's Trust for Endangered Species, this *'the most comprehensive investigation of traditional orchards yet to be undertaken … will feed into many other projects across the UK and Europe … significantly improv(ing) our ability to conserve and preserve (wildlife) habitat in the future'* (**5.5**). Orchards East has also been credited with *'Rais[ing] the profile of orchards as biodervsity habitats'* and

'galvanis(ing) local interest' (**5.6**) in Cambridgeshire and Peterborough. By channelling funds into the DNA finger-printing of ancient fruit varieties, according a leading specialist in this field (and developer of the FruitID website, whose work was directly supported by the project, **5.7**), Williamson's work has been instrumental in improving DNA genotyping, enhancing a resource now used worldwide, and, via the Institut National de la recherche agronomique (the principal French ecological research institute), enabling such findings to be shared across 19 European countries.

Legacy: Progress on the project was adversely affected by COVID-19 but our substantial monograph on the history and ecology of orchards in eastern England is now in press. Meanwhile, our 'State of the Orchards' report and associated digital datasets will, for many years, provide a valuable conservation tool for a wide range of partners, conservationists, and relevant government agencies. A newly designed website, Orchards East- https://orchardseast.theportman.co/ supports a 'legacy body', Orchards East Forum, established with partners to sustain the project's activities into the future. It also hosts 'Advice Notes', educational material for schools, and a range of other information, replacing the project's original website. The project will thus continue to provide a platform for knowledge transfer, contributing to social cohesion, improved public health and wellbeing. Our academic research will thus continue to equip communities with the skills and enthusiasm required to resist the decline of a resource of enormous natural and cultural significance, largely neglected until now. As reported by the Senior Ecology Officer of Hertfordshire County Council, our project has *'brought together a powerful, new appreciation of orchards, their role in society and their potential value into the future'*, its *'academic rigour'* allowing *'a justified, expert, and powerful expression of our understanding of orchards … Its work and that of its legacy body will continue to be of considerable importance in helping to justify, support, inform and encourage orchard protection and management'* (**5.8**).

Our 1000 trees should still be flowering and bearing fruit into the next century. Meanwhile, a project emerging from landscape history has evolved into an interdisciplinary venture in citizen science, involving a wide range of stakeholders, young and old, prosperous and disadvantaged. Our planting and cultivation of green spaces now reaches out to influence the future of ecology and heritage not only nationally but beyond.

5. Sources to corroborate the impact

5.1 Letters from Director, East Anglian Life Museum

5.2 Letters from Community Groups and Schools: (**a**) Chatteris, (**b**) Middleton, (**c**) Hadleigh, (**d**) Swavesey, (**e**) Langford, (**f**) Harpenden, (**g**) Luton

5.3 Letter from Lead Advisor Natural England

5.4 Letter from Biodiversity Officer, Norfolk County Council

5.5 Letter from Orchards Biodiversity Officer, People's Trust for Endangered Species

5.6 Letter from Manager, Council for the Cambridgeshire and Peterborough Environmental Records Centre

5.7 Letter from the developer of Fruit ID

5.8 Letter from Senior Ecology Officer, Hertfordshire County Council

5.9 Lists of principal project partners and orchards planted

5.10 Review of *Orchard Recipes from Eastern England: landscape fruit and heritage,* p.31.