

Dorset National Park - Short Case Study Series

To supplement evidence submitted in 2013, 2014 and 2018 on the environment, heritage and biodiversity, and the recreational opportunities in the proposed National Park.



6. National Trust Cyril Diver Project

Project Overview:

During 2013-2015, the Trust, with funding from the Heritage Lottery Fund, Wild Purbeck Partnership and the Neptune Coastline Campaign, embarked upon its largest and most ambitious Citizen Science project to date. The data generated by the project and its legacy far exceeded expectations, and the lessons learned have been invaluable to shaping the way the NT in Purbeck now approaches Management Planning, Conservation Performance Indicator (CPI) reporting, and the property's involvement with volunteers, other organisations and the local community.



The Cyril Diver Project Botany Group - this regular recording group was integral to the systematic recording of vegetation data which formed the backbone of the project.

The Cyril Diver project was centred on the South Haven Peninsula, part of Studland and Godlingston Heath National Nature Reserve. In the 1930s the site had been subject of a meticulously detailed ecological study led by Captain Cyril Diver that both set new standards in the science of ecology and created an unprecedentedly detailed archive of biological information about one of England's flagship nature reserve sites. The project was created with three aims:

- To revisit the 1930s collection of field notes, maps, reports and photographs, a herbarium and an insect collection in order to catalogue and conserve them and make them available to the public for future access and research.
- To repeat the ecological study of Studland, in order to provide a detailed snapshot of the reserve's current ecological condition, and to enable an analysis of ecological change over the 80 year interim period.
- To deliver the surveys through a large-scale volunteering programme, providing opportunities for members of the public including students and schoolchildren to become involved in wildlife recording, to learn new skills, and to develop specialist knowledge.

The project was set up with a steering group involving public and voluntary sector partners. Throughout the duration of the project, partnerships were developed with organisations ranging from small groups of specialist volunteers such as the Dorset Flora Group or the Dorset Moth Group, through to large institutions such as Bournemouth University, RSPB and Wessex Water.

The success of these partnerships has helped embed and broaden the approach of the Wild Purbeck partnership (a co-funder of the project), and has accelerated a change in culture within the National Trust towards actively seeking engagement with specialist organisations and with individuals with specialist skills.

Scale of Volunteer Involvement:

Over 40,000 records of over 3,800 species were generated by the project. Records including many new species records for Studland, several for Dorset, and even two new to the UK! 80 boxes of maps, species records, field notes and photographs were catalogued and made publicly available. The herbarium collection was catalogued and remounted, and the 7000 specimen insect collection was identified, remounted, catalogued and added to the Hope Entomological collection.



Diver's maps - 80 boxes of maps and documents were catalogued and digitised by volunteers.



*Special find - this minute *Roseodiscus fimosus* fungus recorded by volunteers turned out to be the first record for the UK!*

This mammoth effort was achieved by over 200 volunteers over 3,500 days of volunteering throughout the project's duration. Volunteers came from a variety of backgrounds and skill levels, from an initial core of naturalists, professionals and existing National Trust volunteers, to members of the local community and general public with no prior experience of wildlife surveying, to students from colleges and universities.

Of the estimated 3500 volunteer days, over 1400 of them were spent by 'skilled' volunteers, and nearly 800 by 'expert' volunteers. By initially targeting the specialist groups to become involved, and involving them in the steering group, the project became known as one of scientific interest and rigour rather than just being about raising awareness and geared towards opportunities for beginners to get involved.

Volunteer recruitment and training was achieved through a variety of methods including monthly newsletters, 15 workshops, five bursary awards, two joint-funded PhDs and the support of many BSc. and MSc. student projects.

Bournemouth University were represented on the project steering group from the beginning. Over the three years, students were involved in the following capacities:

- Undergraduate work experience placements
- Undergraduate dissertation projects
- MSc research projects
- PhD research projects
- Undergraduate lectures as part of the taught curriculum
- Voluntary activities organised through the student Wildlife Conservation Society
- Extra-curricular "Student Environmental Research Team" (SERT) projects
- Developing field skills through workshops
- Attending regular survey days as volunteers, with a chance to work alongside experts in the field.



Moth trapping - volunteers set out moth traps at key locations to compare their catches with those of over 80 years previous.

Standardising Data:

One of the project's strengths was the freedom given to volunteers to take part in their own time, if they preferred, and to send in their records independently. However, one weakness of this approach was the lack of standardisation in the way different volunteers recorded; particularly in terms of the spatial accuracy of the data they recorded, and matching it to the compartments that had been used by Cyril Diver in the 1930s.

The project adopted and invested in the development of the Living Record online recording system (www.livingrecord.net), and this assisted the standardisation of most records. The use of this system had the following key benefits:

- The standardised formatting of volunteer generated biodiversity records
- Site boundaries and compartment divisions were set up to coincide with the original 1930s recording compartments to allow comparison of change over time
- Volunteers were able to enter their own records
- Records were subject to a verification process through County Recorder verification
- Records were shared with Dorset County Records Centre (DERC) and thus contributed to the wider Dorset biodiversity records database
- Species records could be accessed, reviewed and downloaded instantly by project leaders for analysis and to inform management decisions
- Species records could be visualised instantly by site managers on a basic Google Maps-GIS interface to inform management decisions.

Results Overview:

Data analysis has enabled us to interpret changes in the range of habitats from:

- Sand Dunes and Dune Heath;
- Wetlands and Dune Slacks;
- Tertiary Lowland Heath;
- Secondary Woodland; and
- The Poole Harbour Shoreline.

These together form the landscape of the South Haven Peninsula we are familiar with today. The changes over the last 80 years have been, in some areas, dramatic. Other habitats have remained more stable.

The dynamic eastern dunes and dune slack habitats have undergone significant change since the 1930s. Ecological succession has turned dune grassland to dune heath, dune heath to scrub, and marsh to wet woodland. A reduction in traditional grazing and heath burning regimes has changed the dunes from an open and virtually treeless landscape to a more enclosed and scrub dominated environment.

An entirely new dune ridge and dune slack has formed since 1930, creating new early succession habitats. These habitats are prone to erosion from the dramatically increased visitor numbers to the site which can have both positive and negative effects.



The Sand Earthtongue Fungus (Sabuloglossum arenarium) - This Nationally Rare species, requires just the right amount of disturbance to thrive. Too much or too little and it will disappear. Mapping of its distribution by helps us to monitor and protect it for the future.

Water levels in Little Sea and the surrounding marshes have continued to rise and salinity levels have continued to drop as the accretion of new dune material further isolates this previous shoreline from the sea.

Non-native invasive species such as the heath star moss (*Campylopus introflexus*), pirri-pirri bur (*Acaena novae-zelandiae*), carp (*Cyprinus carpio*) and Sika deer (*Cervus nippon*) have all had impacts including swamping bare ground habitats, increasing water turbidity and reducing aquatic flora and invertebrate diversity; and crowding out native roe deer.

The woodlands have developed into a more stable and enclosed environment. Canopy cover has increased which has resulted in the shading out of light-loving ground flora. The impact of non-native Sika deer is most pronounced here, with the reduction in understorey vegetation resulting from deer grazing over the last 80 years.

The Tertiary lowland heath habitats have remained relatively stable since the 1930s. There has been a general increase in vegetation height and scrub cover resulting from natural succession, influenced by the reduction in traditional heathland management techniques such as controlled burning and livestock grazing since Diver's era. Sika deer have had some benefits here, browsing areas of heath and helping to maintain areas of structural diversity by slowing down natural succession.

The Harbour Shoreline has been subjected to increased erosion, water level rise and increases in nutrient levels in Poole Harbour through increased recreational, agricultural and commercial activity in the area. A reduction in sand and gravel protrusions, saltmarsh communities and microhabitat features such as brackish inlets and pools is apparent from aerial photographs and vegetation analysis.

Overall, vegetation data indicates the following general trends:

- More mature / uniform sward
- Reduction in open habitat / microclimates
- Invasive species impacts
- Anthropogenic impacts - WWII, erosion, litter, dog mess etc.

Generally speaking, species which depend on open habitats and sparse vegetation (such as the heath tiger beetle *Cicindela sylvatica*, and the moss *Campylopus brevipilis*) have declined, and species which depend on mature habitats and scrub (such as the smooth snake *Coronella austriaca*, Nightjar *Caprimulgus europaeus*, Wood Ant *Formica rufa* and Dartford Warbler *Sylvia undata*) have increased.

There has been an increase in non-native species (such as the Wasp Spider *Argiope bruennichi*, Sika Deer, Common Carp and Heath Star Moss), particularly those associated with increased urbanisation (such as the False Widow Spider *Steatoda nobilis*).



Studland Heath 1936 - an open and virtually treeless landscape of early successional habitats.



Studland Heath 2013 - a more mature and enclosed vegetation sward and reduced bare ground microhabitats.

Overall, species diversity at Studland has remained similar over the past 80 years. However, its composition has changed. Lessons learned from the project results are now being turned into management plans for key species which have not benefitted from the changes over the last 80 years and targeted management is being implemented with the aim to ensure that Studland supports a range of habitats at different successional stages to benefit the widest range of species possible.

The Legacy:

We now have as detailed a picture of Studland's biological condition as we have for any of our sites. We can quantify how it has changed over an 80 year period, and understand what has caused those changes. More data means we better understand the site's features and a better understanding of the processes of ecological change means better management decisions.

The new NNR Management Plan for Studland and Godlingston Heath has now been written. The data and insights resulting from the project have formed the foundations of this new evidence-led approach to Management Planning. This has inspired a new raft of evidence-led Management Plans to be produced for the suite of sites within the NT Purbeck portfolio, based on evidence generated by continued volunteer recording.

Through the project, Studland became the site of choice for skilled naturalists, and there was strong feedback that this was due a widespread feeling among them that their efforts were contributing to something bigger than just their own records; specifically to a scientifically interesting study, and to future improved management of the site.



Volunteers continue to record across Purbeck, generating the data we need to ensure our management is evidence-led.

A result of the strong collaboration with Bournemouth University, there has been a significant change in the culture of natural sciences students, with greater recognition of the value of and opportunities for getting involved practically in ecological conservation.

Following the completion of the Cyril Diver Project, a large group of volunteers who are continuing to record on NT Purbeck sites have now been deployed across the suite of NT Purbeck sites. One of the main areas of focus of volunteer effort is the survey of Priority Habitats across the National Trust Purbeck Estate to establish a botanical baseline for under-recorded sites, assess the current condition of our Priority Habitats and to monitor change over time.

This survey and monitoring work is vital in understanding the condition of our sites, both for our Priority Habitats and for the species themselves. Species surveys increase our knowledge of what significant or rare species may be present on our sites and can contribute to wider knowledge (e.g. national monitoring schemes). The data helps us to understand the quality of the environment and the effectiveness of our management. It allows us to report internally on Key and Conservation Performance Indicators, contribute to wider knowledge (e.g. national monitoring schemes), target resources more effectively, and to measure our progress towards conservation objectives under the Trust's Land Outdoors and Nature Strategy.

At a time of severe cuts in resources to nature conservation organisations, this project has demonstrated that Citizen Science needs to be an integral part of how we deliver our strategic aims for conservation, particularly evidence-led management.

Citizen Science and Wellbeing:

Through joint Bournemouth University and National Trust funded PhD research, Gitte Kragh explored the relationships between Citizen Science and conservation achievement.

Her full thesis can be accessed here: <http://eprints.bournemouth.ac.uk/29397/> and publications resulting from her research can be accessed here: <https://staffprofiles.bournemouth.ac.uk/display/i7205585>

Abstract:

Kragh, G., 2017. A holistic approach to environmental volunteering: connections between motivation, well-being and conservation achievement. Doctorate Thesis (Doctorate). Bournemouth University.

Environmental volunteering, such as biodiversity monitoring and practical conservation volunteering, provides a unique opportunity for achieving positive outcomes for both volunteers and conservation. While the social sciences have focussed on motivation, well-being and health benefits for volunteers, the environmental sciences have focussed on conservation outcomes. However, these parallel research agendas must be merged into a multidisciplinary, holistic approach to fully comprehend the complexities of the volunteering process and optimise outcomes.

This thesis provides a first step in this direction by drawing together and extending research across psychology, health and conservation with the aim of investigating the relationships between environmental volunteer motivation, volunteer well-being and conservation achievement as perceived and experienced by volunteers and volunteer managers. Data collected from UK onsite and worldwide online surveys of nature-based activity participants, volunteers and volunteer managers are used to investigate these relationships. This thesis uncovers hitherto unknown discrepancies between perception and reality by volunteers and managers of volunteer motivation, well-being and conservation achievement.

Environmental volunteers have a hierarchy of motivations, with value-based motives and desire to learn and be outdoors being more important, that was not recognised by volunteer managers. Similarly, volunteer managers underestimated the positive effect volunteering had on volunteers' well-being. Interestingly, volunteers and managers rated the same conservation achievements differently, highlighting the need to develop and communicate more objective measures. Volunteers and managers both perceived that more motivated volunteers with higher levels of well-being would lead to increased conservation achievement, but this research found no such direct link between volunteer motivation and well-being and conservation achievement. This surprising result may be due to a shift in environmental volunteering towards a more experience-focused pattern of engagement.

Volunteers, though interested in conservation, now also expect personal benefits from their volunteering, without which they leave. The implications of this change is that managers need to understand their volunteers' motivations and well-being better to create fulfilling experiences where not only conservation, but also the volunteering experience itself, is at the centre.

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