

Project Co-ordinator:
Jennifer Hewitson
Northumberland National
Park Authority
Coquetdale Centre
Rothbury
t: 01669 622071
m: 07766467787



Project Officer:
Tracy Hall
Tweed Forum
15 Glendale Business Park
Haugh Head
Wooler
t: 01668 282121
m: 07824197016

Issue: Number 4

Winter 2013 - 2014

INSIDE

Demonstration Events

Wildfire Work

Grassland
Management

Pest And Disease
Pressures

Resilient Cropping

Netherton Burn
Runoff Management

Satellite Cow Tracker

Farm Resilience
Planning

Resilience Works
Portfolio

Funding

...and Farewell

Welcome

Welcome to the fourth edition of the Cheviot Futures project newsletter. We hope that you find this latest update on the work of the project interesting and informative.

Cheviot Futures is a cross border initiative committed to providing practical, real-world solutions to the challenges faced by our farmers, land managers, and rural communities in the face of a changing climate.

This newsletter aims to keep you up to date with the progress of Cheviot Futures as we near the end of the current phase of delivery, to spread the word about the project and share our learning to date.

More information about our work and regular project updates are available on our website – www.cheviotfutures.co.uk.

Copies of this and previous newsletters, and case study publications, are also available to download and in hard copy from NNPA, Coquetdale Centre, Rothbury and Tweed Forum, Drygrange, Melrose.

NRN Conference

In November 2013, Cheviot Futures was invited to present at the rural development conference held in Cardiff.

Building a Better Rural Future UK Conference

Cheviot Futures was invited to a national conference in Cardiff to host two workshops on best practice transnational co-operation projects, with the aim of getting more co-operation embedded in the next Rural Development Programme. Attendees included colleagues from Defra, Scottish and Welsh Governments, Natural England, European Rural Networks and many more. The project was well received and the lessons learned will go some way to influencing the next Rural Development Programme.



SUMMER 2013

Demonstration Events

Cheviot Futures' summer 2013 show season

In addition to the events hosted directly by Cheviot Futures and in partnership with others, we have also attended a number of agricultural shows and events during the course of the summer 2013 show season:

Border Union Agricultural Society Childrens' Day, Kelso
Glendale Childrens Day, Wooler
Royal Highland Show, Edinburgh
Border Union Show, Kelso
Glendale Show, Wooler
Yetholm Border Shepherds' Show
RHET Borders Food and Farming, Kelso
Rural Careers Showcase, Rothbury

Monday 13th May 2013: Park House, Harbottle, Northumberland

Proactive grassland management – what's in it for me?

Over 70 farmers and advisors attended a practical demonstration event on proactive grassland management in May 2013.

The interesting and informative event was hosted by Cheviot Futures and Catchment Sensitive Farming (CSF) and held on Rams Haugh, on Park House farm, Harbottle, by kind permission of Mark and Jilly Woolston-Houshold (landowners), Rural Partners Ltd and Robert Mackay (grazier). The event comprised a practical demonstration of assessing soils for structural profile and compaction, led by James Bretherton of AgScope, followed by a demonstration of a range of grassland aeration and sward lifting equipment.

Machinery on site included the Ritchie aerator (3m model), Ritchie Actisol, Opico Sward Slitter, Opico Sward Lifter and the McConnel Shakearator.

The equipment was supplied and demonstrated by Carrs Billington Agriculture (Massey Ferguson and Ritchie), Rickerbys (Claas, Opico and McConnel), and private contractors Tony and James Drummond (Ritchie), and Silvermoor.

Those attending the event had the opportunity to learn about good soil profile characteristics, implications of compaction on grassland productivity, climate change resilience and diffuse pollution management, as well as viewing and comparing the equipment available which can assist in the management of grassland and particularly the alleviation of compaction issues.

The practical demonstration was then followed by a pie and peas supper at Alwinton, talks from James Bretherton (AgScope) and Ian Cairns (Farming Advice Service), and lively discussion.

Grassland aeration and sward lifting treatment offers multiple benefits to grassland management, alleviating compaction in both the upper layers of the soil profile; commonly caused by livestock and weather conditions and assisted by aeration treatments, and also in the deeper layers of the soil profile; commonly associated with machinery and field operations and assisted by sward lifting treatment. The benefits to the soil structure increase nutrient uptake and infiltration of water through the soil profile, minimising surface water runoff in wet conditions and maximising water availability in dry periods. There was much discussion at the event of the benefits to productivity and indeed palatability of grassland as a result of such operations.

A follow up discussion event took place on 26th November, also well attended, considering sward improvement by species selection and mechanical intervention.



Grassland aerator equipment in action



The innovative prototype trailer mounted solar PV alternative watering system

Wednesday 21st August 2013, Mowhaugh, Yetholm, Borders

Alternative water provision for livestock

A practical demonstration event to showcase a range of options available to livestock producers for providing fresh drinking water supplies from alternative sources to direct natural watercourse access by stock.

Removal of access to watercourses and natural wetlands may be as a result of insufficient water provision due to the effects of climate change, protection of the watercourse and riparian habitat for conservation or diffuse pollution reduction reasons, or to assist management for liver fluke in sheep.

Any removal of stock from watercourses needs to be balanced by a sustainable and efficient water supply from an alternative source.

Cheviot Futures has considered and implemented a range of solutions on different sites, including pumped systems, solar powered options, mains water supplies and pasture pumps.

This event, attended by over 20 farmers and advisers, provided a valuable opportunity to compare and contrast a range of systems and solutions, discussing pros and cons of each to allow farmers to identify the best solution for their situation. A major benefit of the day was being able to discuss the systems installed at Mowhaugh with the farm business contacts making use of them on a daily basis.

Tuesday 17th September 2013

Adapting landscapes to meet tomorrow's challenges – Cheviot Futures case study day

Over 40 attendees from far and wide came to learn more about the work of Cheviot Futures. Delegates came from a wide range of partner organisations including the Cotswolds Conservation Board, United Utilities, local Rivers Trusts, the James Hutton Institute and Natural England.



Over 40 delegates attended the Cheviot Futures Adapting Landscapes to Meet Tomorrow's Challenges event in September 2013

The day had a practical focus where delegates were encouraged to get out and about to look at the projects on the ground. The morning session focused on water issues in the Bowmont Valley, projects coping with too much and too little water. The afternoon included a demonstration from Northumberland Fire and Rescue Service showcasing the partnership work that we are doing on wildfire.

It was a great opportunity to learn from others and network with partner organisations, a successful day for all who attended.

Sustainable water management and K-Line demonstration

Tuesday 6th August 2013, Fenton Centre/ West Fenton/Humbleton, Wooler, Northumberland

18 people attended a practical demonstration and discussion event aimed at farmers and land managers considering the role of sustainable water resource management.

The morning session featured discussion around the role of managing water resources in a sustainable manner, with a focus on climate change resilience and diffuse pollution reduction, as well as introducing some of the solutions and equipment available to assist with this at the farm level.

In the afternoon attendees were given the opportunity to see a practical demonstration of the innovative trailer mounted solar PV alternative water solution and then a farm demonstration of the K-line sprinkler pod system, showcased as a potential grassland irrigation tool.

The K-line sprinkler pod line in place on Humbleton.



UPDATE

Wildfire Work

Northumberland National Park Authority is working with Northumberland Fire and Rescue Service and TMS Europe to trial an automated detection system designed to give early warning of wildfires.

The pilot – the first of its kind in the UK – will take place on the Debdon Hills, near Rothbury, overlooking the Simonside Special Area of Conservation, which is designated for high level protection due to the important habitat and species found there.

The project has been made possible thanks to a grant from Northumberland Uplands Leader through its independent local panel, the NULeader Local Action Group.

Dry springs and summers, like the long period of drought this year, have led to a number of wildfires across the heather moorland of the National Park in recent years. During wildfire events the peat soils, which have taken thousands of years to establish, can catch fire and burn down to the bedrock. They are irreplaceable, along with the forest, heather, game and wildlife that live on them. Wildfires are also a significant risk to rural businesses, livestock and to the health and well-being of local populations nearby.

The Automatic Wildfire Detection System to be piloted is an innovative method based on a hybrid system presently used in waste bunkers of inflammable materials (mandatory in Germany). Results will demonstrate its effectiveness for providing an early warning.

TMS Europe Ltd with its infrared camera specialist, DIAS Infrared GmbH, for whom it is the UK agent and distributor, has been awarded the contract to supply and install the fully functioning automatic detection system for wildfires. The infrared cameras and equipment will be mounted on an existing mast and will be capable of detecting wildfires to a distance of 5 miles from the mast (giving a theoretical coverage of over 50,000 acres from one camera). Any detection of heat will trigger an alarm and an operator from a remote site will train the infrared camera and live view camera on the identified area to determine if it's a wildfire before contacting the Fire and Rescue Services.



Heather burning on moorland

The detection system will be located in a particularly harsh outdoor environment and is designed to withstand conditions with temperature variations between -20°C and +35°C with wind speeds exceeding 140Km/h, rain, snow, hail, dust and insects etc. TMS Europe Ltd with DIAS Infrared GmbH will provide training and on-going support to the National Park Authority and its partner agencies in the use and administration of the system.

The results of the tests will be shared with local, national and international stakeholders through a variety of different means and events. If successful, the possibility of expanding the system to cover a larger geographical area of Northumberland National Park will be considered, and there will be a wide range of applications for the system across the UK and abroad.

Collaborative Burning Project

Cheviot Futures have been working with Northumberland Fire and Rescue Service to secure funding to expand the collaborative burning project. Further funding has been allocated by NNPA sustainable development fund to continue the project for another three years.

Focus On Forage Creates Livestock Farming Resilience

For the vast majority of livestock farmers, a greater focus on the efficient production and utilisation of homegrown forage will be an essential part of their future development and sustainability.

This is due to the inevitable and unrelenting increase in input prices – be that feed, fertiliser or fuel – and other factors such as adapting to more challenging weather patterns resulting from climate change.

The good news is that the opportunities and potential for higher production and greater efficiency from forage are increasing all the time, mainly through the development of new varieties but also as a result of the adoption of alternative systems and even the re-introduction of some more traditional methods.

Iain Eadie of specialist forage company British Seed Houses outlines the opportunities for livestock farmers by addressing four key areas.

“When seeking to maximise a farms forage production potential the very first thing is to ensure that soils are in the best possible health,” he says. “Poor soil structure or depleted soil fertility can often be the cause of underperformance of grassland and forage crops in my experience.

“The next step is to evaluate existing swards and take decisions on which fields to renovate or reseed. Even the best managed swards will deteriorate over time, and the relative productivity and response to fertiliser of sown species is far greater than that of the weed species that take over.

“Once decisions to renovate or renew old swards have been taken, the next key stage is to assess the best replacement options. Start by deciding what the primary use of the sward will be – whether for cutting, grazing, or dual purpose for example – and then ensure varieties included in mixtures are highly ranked on the independently compiled recommended lists.

“Finally, I would advise all livestock farmers to be aware of alternative forage crop options that can be used to improve overall forage output. This may be species such as white clover or perennial chicory for example that would be incorporated into grassland swards to good effect, or stand-alone crops such as forage brassicas or red clover. Alternative forage crops such as forage brassicas are not only good sources of forage – often productive when grass swards may not be – but they can also be used as grassland break crops in a farm's rotation.”

Swift hybrid brassica is a valuable alternative forage



GUEST FEATURE FOCUS

Grassland Management

The following article has been supplied by British Seed Houses, experts in grass seed mixes and sward revitalisation.

For further information and farm specific advice, please contact the local representative Iain Eadie – 07971 640 428.



Additional information and brochure material can be downloaded from the website – www.britishseedhouses.com

Further information is available on the Cheviot Futures website and in the case study “Grassland Management and Climate Change Resilience”

GUEST FEATURE FOCUS

Pest and Disease Pressures

The Climate Change Pest and Disease Report was commissioned by Cheviot Futures in 2013 to draw together the relevant research available to date, which examines the expected impacts of climate change on pest and disease pressure in the Cheviot Hills region and the implications for the future. It provides information and guidance to help inform management of arable cropping, grassland, livestock and woodland in light of changing pest, weed and disease pressures.

The project contributes to Cheviot Futures aims and draws together and disseminates information relevant to managing the Cheviot landscape under changing climate conditions.



Climate change will impact upon pest and disease pressures in the Cheviots and this is well documented in the literature reviewed. It may well be the case that some diseases or pests that have presented a problem in the past disappear whilst new 'Alien' threats are introduced to the region. Existing issues may become more widespread and also more severe as the environment favors the parasite lifecycle. There is a huge amount of research and ongoing projects that explore the anticipated impacts climate change will have on pest and diseases. What is made clear is that these changes to pest and diseases while arguably unavoidable can be managed and controlled to some degree.

Arable

The literature reviewed highlights that there are many potential threats to arable production from changes in disease and pest geographical range and from new "alien" threats. There are a number of ways in which these threats can be managed in an arable situation either by cultural or chemical controls. The main adaptation measures that farmers can take to build resilience and prepare for change in arable situations, as discussed in the literature reviewed, are listed below:

- Alter timing of sowing, harvesting and spraying activities.
- Use varieties of crop more resilient to pest, weeds and diseases.
- Improve understanding and recognition of crop diseases, pests and weeds.
- Improved pesticide, herbicide and fungicide strategies and application techniques.
- Utilise monitoring and early warning systems.
- Use of Integrated Pest Management Control
- Consider crop rotations.
- Use of cultivations and cultural controls.

Grassland

There are also pest, disease and weed risks to grassland production as a result of climate change. The main adaptation measures presented in the literature review for grassland management are listed below:

- Use of Herbicides (new varieties)
- Ensure regular grazing or frequent cutting.
- Maintain soil fertility to ensure grass can be competitive against weeds
- Check bought-in hay and straw for weeds, especially if feeding outside.
- Use appropriate cultivations.

The full report and summary articles are available on the Cheviot Futures website.

Livestock

Livestock is an important sector in the Cheviots and the threat from pests and disease presents a significant threat to this sector. In the literature reviewed there is growing evidence of the extent and type of diseases and pests that may become an issue to livestock. The literature also presented a range of adaptation steps that farmers could take to prepare their farms.

These are listed below:

- Better use and development of forecasting tools.
- Consideration of grazing options/timings.
- Improving understanding of the range of treatments available.
- Faecal Egg Counts.
- Improving understanding of the range of diseases out there and the identification of these diseases.
- Health Planning - encourage use. Farmers should consider this as a key option.
- Vaccination plans on farm and contingency planning (quarantine).

Woodland

Woodland forms part of the diverse landscape of the Cheviots and it is therefore important to think how climate change may affect the woodland especially how the risk from pest and diseases may impact. The literature discusses that woodlands may face risks from diseases and pests more common to warm climates. The ways in which land managers could adapt woodland management to build resilience to climate change are listed below:

- Utilising non-native species.
- Buffer zones around broadleaved and ancient woodlands.
- Increase genetic diversity of existing woodlands.
- Contingency planning for outbreaks
- Short Rotation Forestry
- Silvicultural practices
- Natural selection
- Use of Integrated Pest Management Control
- Use "citizen science" to help identify tolerant trees

Research is ongoing into the types and extent of pest, disease and weed impact upon different crops, livestock and woodland habitats. There is a significant amount of research underway which aims to model disease spread and impact under different climate scenarios. As well as this significant efforts are going in to mapping confirmed outbreaks to inform research. Effort is being given to developing new herbicides, pesticides and fungicides as a response to new disease and to tackle resilience that pests, disease and weeds may have built up resilience to existing varieties. As well as this thought is being given to the active management steps farmers can take to prepare their farms for expected changes. This body of work is growing rapidly and it is important to keep informed about ongoing work to inform decisions in the Cheviot Hills.

The Cheviots landscape consists of hill and upland sloping down towards lighter more productive land to the east with some heavier but productive land to the south. There are a range of soil types present across the Cheviots with free draining floodplain soils to slowly permeable wet acid upland soils. Habitats present in the Cheviots include heather moorland, blanket bogs, unimproved grassland, semi improved grassland, mixed broadleaved woodland and arable land. The majority of arable land is situated on the fringes of the hills and crops grown include wheat, barley, oats, oil seed rape and potatoes. Livestock farming is also important with dairy, beef and sheep farms present in the Cheviots.

This dynamic and mixed landscape is predicted to be affected by climate change including changes to seasonal rainfall patterns such as drier summers and wetter winters and increased incidences of extreme rainfall events. Average temperatures are expected to rise by around 1.7°C with summer temperatures expected to increase by up to 3.5°C. The number of extreme weather events are expected to increase with more storm events with high winds and increased risk of flooding and drought occurrence.

GUEST FEATURE FOCUS

Resilient Cropping

The Climate Change Resilient Cropping project was commissioned by Cheviot Futures in 2013 to draw together the relevant research available to date, which examines the expected impacts of climate change on arable and grassland management decisions focusing on issues that will directly affect the Cheviot Hills area. It provides information and guidance to help inform cropping decisions in the Cheviots in both arable and pastoral agricultural management. The project contributes to Cheviot Futures aims to draw together and disseminate information relevant to managing the Cheviot landscape under changing climate conditions.



The Cheviots landscape consists of hill and upland sloping down towards lighter more productive land to the east with some heavier but productive land to the south. There are a range of soil types present across the Cheviots with free draining floodplain soils to slowly permeable wet acid upland soils. Habitats present in the Cheviots include heather moorland, blanket bogs, unimproved grassland, semi improved grassland and arable land. The majority of arable land is situated on the fringes of the hills and crops grown include wheat, barley, oats, oil seed rape and potatoes. Livestock farming is also important with dairy, beef and sheep farms present in the Cheviots.

This dynamic and mixed landscape is predicted to be affected by climate change including changes to seasonal rainfall patterns such as drier summers and wetter winters and increased incidences of extreme rainfall events. Average temperatures are expected to rise by around 1.7°C with summer temperatures expected to increase by up to 3.5°C. The number of extreme weather events are expected to increase with more storm events with high winds and increased risk of flooding and drought occurrence.

Climate change will impact upon arable and grassland management decisions in the Cheviots. There is a huge amount of completed and ongoing research that explores the anticipated impacts climate change will have on agriculture. What is made clear in this literature is that farmers face both opportunities and challenges from climate change and need to mitigate and adapt against negative aspects and capitalise on the opportunities being presented.

Arable Resilient Cropping

The literature reviewed highlights that arable management can develop resilient cropping in a number of ways some of them well documented and others which are subject to ongoing often complex research. The main adaptation measures presented in the literature review for arable management are listed below:

- Planting different crop varieties suited to the expected climatic conditions of the Cheviots.
- Improve soil structure and increase focus on minimising soil structural damage.
- Alter cropping patterns considering suitability of rotations and sowing and harvesting times.
- Improving water management by investing in irrigation systems.
- Considering the benefits of moving to a mixed farming system or taking land out of arable production.
- Invest in new drainage and maintain existing drainage networks.
- Utilise Marginal Land to diversify crop base and spread risks.

Grassland Resilient Cropping

The main adaptation measures presented in the literature review for grassland management are listed below:

- Utilise new varieties of grass and consider using forage legumes.
- Extend grazing season and introduce out wintering.
- Utilise cow tracks and infrastructure improvements.
- Improve soil management.
- Improve grass utilisation and management.
- Alter stocking rates.
- Use supplementary feeding.
- Improve management of forage supply and maintain forage reserves.
- Late summer reseeds and the use of overseeding.
- Use of alternative forage crops.
- Invest in new drainage and maintain existing drainage networks.

Research is ongoing into the adaptations presented above for building grassland and arable cropping resilience. This work will lead to further information to inform arable and grassland management in the Cheviots. Outputs from ongoing work may bring forward new adaptations not yet considered or scientific developments in breeding new crop varieties that may be applicable for use in the Cheviots. As a result it is important to keep informed about ongoing work to equip the Cheviots with all the knowledge available to make the best decisions about cropping.

This report has highlighted the fact that there are some gaps in research. These include:

- Existing research is not sufficient to depict clear adaptation strategies for different crops at the farm level. Local research and field trial projects are required.
- The barriers and drivers to farmers implementing adaptations need to be explored with a focus on the likely financial and business implications.
- There needs to be more work in development/signposting of priority crop varieties with greater resilience traits that are specific to the Cheviots.
- Climate change focus farms and discussion groups could be established in the Cheviots as a forum to gather information on how climate change is affecting cropping and to learn from experiences of farmers adapting to climate change.
- Research into the food supply chain. In particular a focus on investigating the livestock forage supply chain maybe beneficial to establish any alterations in grassland management needed.

Much of the existing research is based on modelling and predictions and many farmers would be sceptical to make changes and investment based on this information. Undertaking research projects that have a more local focus, such as in the Cheviots, will act as a way to encourage farmers to be proactive rather than reactive in implementing and considering adaptations and integrating them into forward planning.



Key to building the resilience in both arable and grassland cropping is equipping those responsible for land management decisions with the knowledge and understanding to make informed decisions. In order to improve uptake of adaptations extension work will be required to allow farmers to make these decisions. Organisations, such as Cheviot Futures, will therefore have an important role in ensuring gaps in knowledge are met through research and in disseminating findings to farmers.



Climate Change Resilient Cropping, SAC, 2013

The full report and summary articles are available on the Cheviot Futures website.

FEATURED PROJECT

Netherton Burn Runoff Management

Elilaw Farm, Netherton, Northumberland

The village of Netherton has had issues relating to flooding of domestic properties, linked to the capacity of the Netherton Burn channel and associated infrastructure in the village. Recent years have seen a number of flood events which have resulted in flood waters reaching a small number of vulnerable properties.

There is an active flood group within the village, set up and assisted in partnership with the Northumberland Community Flooding Partnership (NCFP) with which Cheviot Futures has fostered close links. As a result the NCFP project officer approached Cheviot Futures with regards to developing NFM potential on the Netherton Burn upstream of the settlement.

Project Development

Following initial discussions between Cheviot Futures and NCFP, and provisional agreement from the landowners, we approached the PROACTIVE team at the University of Newcastle Upon Tyne to assist with the development of specifications and detailed proposals for the project. This team, part of the School of Geosciences and Civil Engineering, have had previous experience of developing runoff management and sustainable catchment management solutions to manage flood risk and enhance water quality.

This partnership approach offered an opportunity to build on the experience of works elsewhere, including the pioneering project on the Belford Burn, whilst adding to the evidence portfolio for the concept of Natural Flood Management as a wider approach.

Catchment Monitoring

Ahead of beginning the capital works on site, a network of monitoring equipment was installed on the Netherton Burn to build a baseline picture of how the watercourse reacted in high flow and flood conditions, in order to inform design and specification, and to allow inferences to be drawn as to effectiveness of installed features in due course.

Telemetered river level and rainfall measuring equipment were installed in the Netherton catchment in November 2011. Data sets are recorded at 15 minute intervals, which are uploaded to a web-based database on a daily basis. The chart shows that 2012 had a number of intense rainfall events occurring in the summer which resulted in 'flashy' responses in river level. The highest peak river level of 1.4 metres was recorded at 05:00 on 25 September; this was due to 78 millimetres of rainfall measured over a 44 hour period. The flood mitigation features constructed in the catchment are designed to target these high-magnitude events by temporarily storing and attenuating peak flows.

Implemented Works

A series of four features have been created across Elilaw as part of the Cheviot Futures Netherton Burn project. These features comprise a grassed swale to divert peak flows from the Netherton Burn, ditch bund to divert high flows from independent drainage networks, the enhancement of a floodplain storage area, and a farm pond with additional flood storage capacity.

Additional works

Following practical completion of the works detailed within this case study, Northumberland County Council have secured additional funding to undertake further works of a similar nature elsewhere in the Netherton Burn catchment, with a view to maximising opportunities to reduce the flood risk to Netherton.



The following article has been provided by **Hermes Carlyon, of the Flood and Erosion Risk Management Team at Northumberland County Council, October 2013.**

Netherton Flood Alleviation Scheme

Following the flooding issues experienced in Netherton, particularly in 2008 and 2012, Northumberland County Council submitted a bid for government grant funding to provide a flood alleviation scheme for the village. In February 2013 the bid was approved for a spend of £97k, made up of a combination of Local Levy (regional) funding and Flood Defence Grant in Aid (national).

The proposed flood alleviation scheme outlined plans to use natural catchment management techniques in order to reduce the risk of flooding in Netherton. This would be executed by the construction of a number of runoff attenuation features designed to provide temporary storage for surface water runoff, which would then be allowed to slowly drain from these features. The net desired effect is to reduce the total volume of runoff during and just following an extreme rainfall event, thereby reducing the risk of flooding to properties in Netherton.

A similar scheme was piloted by Newcastle University and the Environment Agency in the Belford catchment in northeast Northumberland, and there is a strong suggestion that the flood risk in Belford has been significantly reduced since the work was carried out.

By the time the funds for the scheme were made available, Cheviot Futures had already constructed a large storage pond in the lower catchment (on the Elilaw holding) of the Netherton Burn, and had also begun work on several other attenuation features including strategically positioned piped bunds and a large swale designed to divert high flows away from the main watercourse.

The services of a team from Newcastle University were contracted to develop and design the scheme in the Netherton catchment, and these would complement the work carried out by Cheviot Futures.

Following extensive catchment walkovers, discussions with landowners, farmers and the local community, a series of attenuation features have been designed and proposed, with construction work due to begin pending suitable weather conditions.

In light of some scepticism as to the impact of this kind of flood alleviation scheme, it is hoped that as time goes by, more members of the community will perceive this to be an effective technique as part of a flood risk management strategy in Netherton.

In addition to the works throughout the catchment, Northumberland County Council is investigating the performance of the culvert under the highway in the village. Modelling work is currently being carried out to determine flow patterns and channel modification options are being considered to improve the self-cleansing potential of the culvert.



Ditch bund and sluice drop board at Elilaw



Telemetered rain gauge at Elilaw



The completed farm pond feature at Elilaw, offering offline flood storage capacity.

Further information and technical specifications are available in the Netherton Burn technical case study publication, available online and from NNPA, Coquetdale Centre, Rothbury.

FEATURED PROJECT

Satellite cow-tracker

If you visit the remote College Valley in the National Park this summer you may notice something a bit different about the native cattle grazing the slopes of Cheviot – some will be wearing collars, not with a traditional cow bell, but with a specially-designed Global Positioning System (GPS) unit to track their movements via satellite in real time.

The digitally-connected herd of native breed Luing cattle and farmer, Adam Waugh, are taking part in a major piece of agricultural research by Newcastle University to find out why cattle travel where they do and how this affects the nationally-important plants and wildlife of the Cheviot Site of Special Scientific Interest.

Understanding and managing livestock distribution is very important for conservation management and GPS technology is a state of the art tool allowing researchers to learn why animals make the choices they do about where to graze or take shelter and consequently the impact they have on the environment.

Recently, the established sheep flock which grazed the area of the Cheviot Massif within College Valley were removed when The Estate decided to lower livestock numbers and put an even greater emphasis on conservation management on this part of The Estate. The native cattle involved in this project will be the only livestock grazing the Cheviot Massif this summer. The cattle will not have grazed on the Cheviot before and will initially have to explore the area to find the best grazing, water and shelter. They will also be influenced by extreme weather events that seem to be becoming more common place as a result of climate change.

Tracking animals, even something as large as a cow, can be very challenging in remote locations, especially during the night or in periods of bad weather, so remote positioning is very useful. Unlike radio collars, which have been used before for monitoring animals in the National Park, GPS collars enable the location of each animal to be recorded on the collar at a pre-determined interval without someone having to go out on the hill and locate the animal. GPS collars can also give an indication of what the animal is doing by recording how it is moving. The information stored on the collar can then be obtained via satellite link to a computer.

In addition to providing data for the research, the information will help Adam Waugh know where his cattle are on Cheviot, and provide a teaching resource for local schools and University students. Local student Jack Snowball from Alnwick, who is studying at Newcastle University will be involved in the project this summer by analysing the GPS data under the guidance of Dr Richard Bevan. The researchers will also undertake observations of the cattle out on the hill to obtain additional information about their behaviour and grazing patterns. Initial results should be available by the end of the year.

Mary Gough, Farming Advisor for Northumberland National Park Authority, said: *"The results from this cattle tracking work will be linked to information on vegetation and wildlife distribution and abundance. This will help us gain a better understanding of how the cattle grazing influences the important habitats in the Cheviots and the wildlife they support. In future we hope to extend the work to tracking sheep as well as cattle."*

Adam Waugh, Farmer and Mary Gough, NNPA on the lower slopes of The Cheviot, College Valley

"This innovative take on recording livestock movement and activity in the Cheviot Hills will offer a valuable insight into the behaviour of new livestock introduced to an upland environment. In particular, the way the cattle use the grazing area available to them, and how they behave in different weather conditions will provide information relevant to livestock producers seeking to make efforts to increase their resilience to the effects of climate change."

Tracy Hall, Cheviot Futures Project Officer

What is Farm Resilience Planning?

The idea of Farm Resilience Planning is to look at the impacts that predicted climate change effects may have upon an individual farm business and the enterprises that it supports.

Using climate change predictions researched through national science programmes such as UKCP09, indicative scenarios and predicted trends are utilised to identify what issues may be relevant to individual farm businesses as a result of climate change. There are likely to be both challenges and opportunities that are presented by changing climatic conditions in the medium to long term future.

By identifying the challenges and opportunities, the farm resilience planning approach then seeks to identify what adaptations or resilience works may be suitable to assist the farm in addressing the negative impacts, and making the most of the positive impacts of climate change predictions. Advice and guidance from a wide range of sources is tailored to the circumstances of the individual farm.

Update:

In recent months the Farm Resilience Planning concept has been further trialled by Natural England, piloting the approach in the North West of England, and using the idea as the basis for a farm workshop in Hampshire. We are hopeful that Farm Resilience Planning, and Cheviot Futures' role in its development, will see inclusion within the new agri-environment arrangements for England.

Cheviot Futures, through Northumberland National Park Authority, secured a student placement in September 2013 to undertake additional farm visits. This allowed a skills transfer and further development of the concept, as well as helping a young person develop their career prospects and experience ahead of studying a land based MSc topic.

The student placement allowed farm resilience planning as an approach to be shared in a new location within Northumberland, that of the Rede Valley and the Otterburn Training Area. This site presented opportunities for development of flood storage and water quality improvement resilience recommendations, with the landowner engaged and keen to take works forward. Cheviot Futures put forward potential capital works for external funding related to wetland enhancement and creation.

UPDATE

Farm Resilience Planning

Farm Resilience Planning is a concept developed by Cheviot Futures as part of the project aim to assist farmers and land managers throughout the Cheviot Hills area of north Northumberland and the Scottish Borders to adapt to the climate changes predicted for this area.

CHEVIOT FUTURES CASE STUDIES

Cheviot Futures has produced a range of case study documents, intended to provide details of works and approaches developed under the project, with a view to providing advice and guidance to others looking to implement similar approaches elsewhere. The case studies are available to download from the project website, or can be requested in hard copy from Northumberland National Park Authority (Coquetdale Centre, Rothbury) or Tweed Forum (Drygrange Steading, Melrose).

The full list of available titles is as follows:

- Alternative Water Supplies
- Animal Health and Welfare Implications due to Climate Change
- Engineered Log Jams
- Farm Resilience Planning
- Floodplain Specification Fencing
- Grassland Management
- Poaching Around Ringfeeders
- Strategic Native Planting
- Sustainable Riparian Management
- Sustainable Riverbank Protection
- Wildfire Water Resource - Fire Pond
- Netherton Burn Runoff Management Works
- Climate Change Resilient Cropping (web version only)
- Climate Change Implications for Pest & Disease Pressure (web version only)
- North Doddington – A Whole Farm Resilience Approach (web version only)
- Winter Water Storage (web version only)
- Automatic Wildfire Detection System (web version only)

PROJECT ROUNDUP

Resilience Works Portfolio

As we near the end of the current phase of Cheviot Futures delivery, the table below shows the range of works undertaken over the last 3 years. The intention has been to develop a network of demonstration sites to showcase a range of capital resilience projects on farms across the project area, offering real world solutions to a number of climate change impacts and issues.



Wildfire water resource in the Breamish Valley, July 2013



Work underway to install vertical piled timbers as bank protection, Clifton-on-Bowmont, September 2011.

Increasing Resilience to	Project Detail	Location	
WILDFIRE			
Increased risk of wildfire as a result of reduced summer rainfall and increased temperatures	Breamish Valley wildfire water resource (fire pond)	Hartside, Breamish Valley Northumberland Uplands	
	Wildfire management in partnership with the Northumberland Fire Group – e.g. collaborative burning project.	Northumberland Uplands	
	Automatic wildfire detection system	Debdon and Simonside Hills, Northumberland	
FLOOD RISK AND ASSOCIATED MANAGEMENT ISSUES			
Increased flood risk as a result of more extreme weather events and/or increased winter rainfall	Natural Flood Management approach to intercepting high flows and surface runoff. Development of a series of features – grassed swale, ditch bund, floodplain storage, farm pond and sediment traps	Netherton Burn, Elilaw Farm Northumberland	
	Bowmont Valley ELJ works as part of catchment scale approach to Natural Flood Management: Bar apex floodplain ELJs Bank protection ELJs Grade Control ELJ	Bowmont Valley, Scottish Borders	
	Re-meandering works as part of the Eddleston Water project	Cringletie, nr Peebles, Scottish Borders	
	Upland cleugh planting, LWD features, transverse hedge planting	Kelsocleuch, Upper Bowmont Valley, Scottish Borders	
	Sustainable riparian management (floodplain specification fencing, riparian planting, replacement water supply)	Venchen, Yetholm, Scottish Borders	
	Flood risk associated with surface water management	Trialling of JW Flood Protection products – agricultural flood snake on farms	West Fenton, Northumberland
	Increased incidence of riverbank erosion as a result of more extreme weather and/or increased winter rainfall	Ingram Riverside – additional tree planting works	Ingram, Northumberland
Glendale Showfield – riparian planting works		Lilburn Estate, Northumberland	
Riverbank erosion protection works demonstration site – trialling and comparison of multiple techniques		Clifton-on-Bowmont, Yetholm, Scottish Borders	
College Burn sustainable erosion protection works (in partnership with EA)		West Kirknewton, Northumberland	
Strategic native hedgerow planting as bank stabilisation		Mowhaugh, Scottish Borders	

Increasing Resilience to	Project Detail	Location
RESOURCE PROTECTION		
Increased winter rainfall and associated surface water management and diffuse pollution risk issues	Ground reinforcement mesh trials to reduce poaching around supplementary feeding sites	Coquet Valley, Northumberland
	Grassland management – demonstration and advisory events and development of equipment availability. Specific reference to value of management techniques e.g. aeration and sward lifting to alleviate compaction	Coquet Valley, Northumberland
	Filtrex compost based filtration system for reducing nutrient load from yard water	North Doddington, Northumberland
Extreme weather events	Strategic hedgerow planting for shade/shelter/windbreak	Burradon Mains, Northumberland
	Strategic native planting as windbreak feature to alleviate soil losses by wind erosion	North Doddington, Northumberland
	Weather station and satellite broadband installation as early warning system for extreme weather events	Low Bleakhope, Northumberland
ALTERNATIVE WATER SUPPLIES		
Reduced summer rainfall, increased temperatures and extreme drought conditions	Trailer-mounted portable solar powered alternative water supply	West Fenton, Northumberland
	Dual PAPA pump system and pasture pump supply	Mowhaugh, Scottish Borders
	Mains connected trough supply	Venchen, Scottish Borders
WATER PROVISION FOR IRRIGATION		
Reduced summer rainfall, increased temperatures and extreme drought conditions	Water quality monitoring works in support of winter water storage reservoir proposals for securing irrigation supplies	Turvelaws, Northumberland
	Grassland irrigation potential using the innovative Kline system Demonstration event venue	Humbleton, Northumberland
OTHER		
Changes in pest and disease pressure as a result of combined effects of climatic changes	Heliosecom demonstration site – alternative to biobed/biofilter approach to managing sprayer washings etc	Turvelaws, Northumberland
	Research collation undertaken by SAC on behalf of Cheviot Futures	Project-wide
Large scale management changes	GPS tracking of livestock using remote data collection on collars to assess behaviour of newly introduced livestock in an upland situation	College Valley Estate, Northumberland
	Resilient cropping research collation undertaken by SAC on behalf of Cheviot Futures	Project-wide



The portable solar powered water system developed by Cheviot Futures and Inherent Energy in partnership with the farm business at West Fenton, July 2013. Rear view showing the holding tank and inclusive trough arrangement.



The K-line system can be used to supply irrigation to a larger area by moving the lines with a quad bike on a rotational basis.



Mary Gough, NNPA and Jack Snowball, Newcastle University, with one of the College Valley GPS collars.

Partnership Working

Northumberland
National Park Authority

Tweed Forum

Environment Agency

Scottish Environment
Protection Agency

Natural England

Various farmers and
land owners

Catchment Sensitive
Farming

Tyne Rivers Trust

Forestry Commission

Northumberland
Community Flooding
Partnership

Newcastle University

Northumberland
County Council

Scottish Borders Council

Scottish Natural
Heritage

National Trust

Northumberland
Wildlife Trust

Northumberland Fire
Group

ClimateNE

Funding

Cheviot Futures is a co-operative formed from representatives of agencies and organisations involved in working with rural communities of the Cheviots and the surrounding Tweed Catchment.

The initiative takes a simple, practical approach to land management that focuses on taking action to adapt to the effects of a changing climate.

Funding for Cheviot Futures Phase 2 has been made possible by the securing of the very first cross-border funding from New LEADER sources from both the Northumberland Uplands and the Scottish Border LEADER Local Action Groups.

New LEADER is jointly funded by the European Union and DEFRA/Scottish Government

Other funding has been awarded through:

- Northumbria Regional Flood Defence Committee
- Scottish Borders Council
- SEPA

... and Farewell

Early 2014 will see the end of the current phase of Cheviot Futures delivery. We have thoroughly enjoyed delivering the Cheviot Futures portfolio of works and hope that there truly is a lasting legacy of adaptive and resilience advice available through the demonstration sites we have set up and the publications we have produced over the last three years. Please contact either of the lead organisations – Tweed Forum (info@tweedforum.org) or Northumberland National Park Authority (enquiries@nnpa.org.uk) – for further information.

We would like to take this opportunity to say a heartfelt thank you to each and every person involved with the work of the project during this time, especially those members of the Northumberland and Borders farming community with whom we have been so privileged to work alongside.



www.cheviotfutures.co.uk