LONG TERM MONITORING NETWORK: NEWSLETTER

Welcome to the 1st edition of the Long Term Monitoring Network Newsletter!
This newsletter aims to keep all of our volunteers updated on what we are doing within the network,
including updates on all of the protocols, innovation and planning for next year's vegetation surveys.

What is the Long Term Monitoring Network?

The Long Term Monitoring Network (LTMN) is one of the ways in which Natural England understands the effects of climate change, air pollution and land management on the natural environment. It is a sister project to the Environmental Change Network (ECN). The ECN has 13 sites in the UK, which monitor lots of environmental and biological variables at high intensity.

An Environmental Change Biodiversity Network (ECBN) was developed to monitor on many more sites, at lower intensity. The LTMN is England's contribution to the ECBN and includes 37 sites. The network represents habitats from ten target types: Broadleaved mixed woodland; Heathland (upland and lowland); Upland blanket bog; Lowland raised bog; Lowland mires and fens; Calcareous grassland; Neutral grassland; Sand dunes; Saltmarsh and Montane habitats

On each site we measure:

- **Weather**- Rising temperature is changing the timing of seasonal events, disrupting the interactions between species and affecting rainfall patterns therefore allowing us to monitor change across the country.
- **Air Quality** - Air pollution is a significant threat to the natural environment. Collecting atmospheric ammonia and precipitation chemistry readings will allow us to understand the effects of nitrogen deposition.
- **Butterflies -** Good indicators of climate change as general butterfly species can adapt more easily than specialists which can become

isolated as their preferred habitats become fragmented.
- **Birds -**Wild bird populations are an important indicator of the health of the countryside, and knowing to what extent bird populations are increasing or decreasing is fundamental to conservation of birds.
- **Soil chemistry and biodiversity -** Monitoring will help us understand how soils work and how changes to land management, climate and pollution may change soil properties and communities.
- **Land management** – This information will be used to understand the relationship between land management activities and other ecological drivers of change.
- **Vegetation -**Plant communities are an indicator for wider biodiversity and changes in species composition and abundance will help identify the cause and impact of that change.
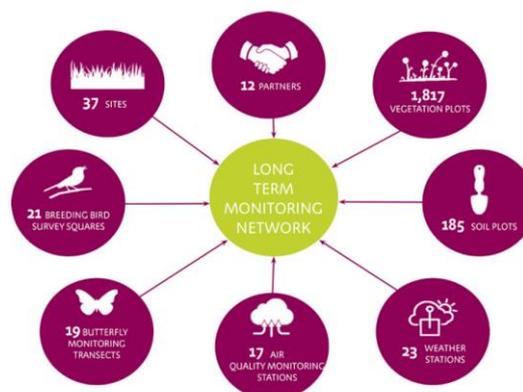

Figure 1: LTMN Network

The LTMN Team- who are we?

Andy Nisbet- Principal Adviser, Evidence Services Team

Andy manages Natural England's Evidence Programme and chairs the LTMN Steering Group. From 2010 to 2012 Andy was also the project manager responsible for developing LTMN. Getting out on at least one of the in-house vegetation surveys each summer is one of the highlights of his year.

Rob Keane: Evidence Lead Adviser

Rob has worked on the project since 2010. His core roles and responsibilities have been:

- Helping to set up the network and monitoring protocols at each site.
- Organising vegetation surveys.
- Lead on our Air Quality protocol.
- Lead on buying new Automatic Weather Stations and set up on new LTMN sites entering into Met Office weather station network.
- Lead on developing and implementing the data protocol and preparing data for publication.
- LTMN Earth Observation lead.

John Holdsworth: LTMN Project Manager

John took over managing the project from Christoph Kratz in 2016.

John is responsible for securing funds for LTMN and ensuring the project runs to time and budget and that the outputs are shared. John also leads on the agreement with the Met Office for running our Automatic Weather Stations.

Kathryn Oddie: Evidence Lead Adviser

Kathryn joined the project in 2016. After being trained up by Rob, Kathryn is now responsible for coordinating all of the vegetation surveys both in house and contracted.

Morgan Smith: Student Placement

Morgan joined the project as a volunteer student placement in June, 2017. Working with Rob as his mentor, Morgan has been learning and assisting in coordination of vegetation surveys, and will be aiding with data QA and analysis.

NE: LTMN team

There are a huge number of people who work on the project and we will be highlighting who they are in future editions of the newsletter.

Highlights from LTMN vegetation surveys 2017

This year the LTMN project ran vegetation surveys at The Lizard NNR, Saltfleetby - Theddlethorpe Dunes NNR, Lindisfarne NNR and Chobham Common NNR.

Overall we had 151 volunteers which included NE staff, staff from partner organisations such as local Wildlife Trusts, students from local universities, Ex NE and English Nature staff and of course our incredible NNR volunteers. This means that when added to the 898 volunteers we had on previous years surveys, that during our survey at Lindisfarne we hit and surpassed 1,000 volunteers (1,049 volunteers to date), which shows the high level of interest and support this long running project has generated. We had a brilliant year and your efforts meant that we have been able to complete:

- 52/55 plots at The Lizard NNR
- 55/55 plots at Saltfleetby-Theddlethorpe dunes NNR
- 50/50 plots at Lindisfarne NNR
- 50/50 plots at Chobham Common NNR

This is fantastic and well done to all involved.

Kathryn Oddie (NE): LTMN The Lizard NNR Survey 2017

Innovation

iPads

This year we have been using iPads to collect the data out on site and have been making improvements to the iPads during the survey season. At Chobham Common, no paper forms were used and all the data is now being collated by our LTMN team! This will save us a huge amount of time when preparing the data collected for publishing as open data so thank you to everyone

for your helpful tips and suggestions during the survey.

We would now like to look into different apps we can use for next year's survey so if you have any suggestions please send them to the LTMN mailbox LTMN@naturalengland.org.uk

DNA:

Rob Keane (NE): DNA sampling at Lindisfarne NNR with David Askew and Morgan Smith.

We tested a DNA methodology at both The Lizard NNR and Lindisfarne NNR even putting our Director David Askew's plant ID skills to the test against the DNA methodology – we will keep you updated with the results.

EARTH OBSERVATION:

The Cheshire to Lancashire Area Team and LTMN are working together to assess Earth Observation (EO) capability for accurately mapping landscapes, not just at the broad habitat level, but at the plant community level across two pilot areas including one of our LTMN sites Ainsdale NNR. This project will allow us to investigate the capability to detect significant change in spatial extent of plant communities and their productivity over time to better understand drivers of change. One of the first outputs of the project combines LTMN data with other surveys carried out at Ainsdale to produce an Annex 1 habitats prediction map. We will tell you more about this project in the next newsletter.
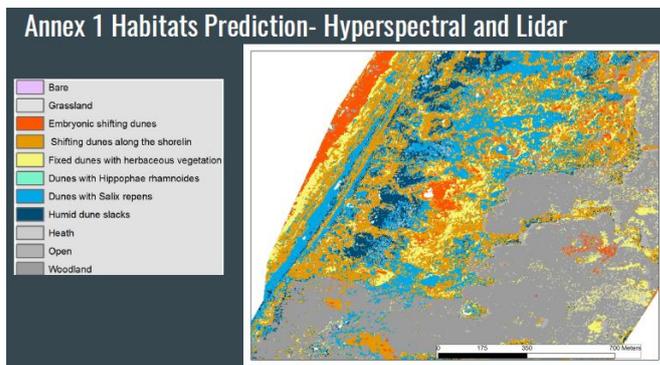

Figure 2: Annex 1 habitat prediction produced by Manchester Metropolitan University (MMU) © MMU

3

Winter 2017/18 – what's happening in LTMN?

SOIL SURVEYS 2017

Natural England's soils specialist Matthew Shepherd has been running soils surveys this autumn with the help of some of our Natural England staff.

The sites that we have surveyed this year are Saltfleetby- Theddlethorpe Dunes, Monk's Wood, Finglandrigg Woods and East Dartmoor. Within the LTMN we are monitoring soil biodiversity using DNA analysis techniques to determine what bacteria communities and groups of bacteria are more prevalent and interacting with plant communities above ground. Soil chemistry is also investigated and allows us to track the nitrogen deposition from the air to the soil as nitrates to better understand the uptake of nitrogen and also the effect of nitrogen deposition on plant and soil communities.

We will provide you with an update about this in a future newsletter.

LTMN Open Data

The LTMN aims to make all of the data that it collects open data. This means that all the data that we collect will be freely available on our Access to Evidence site once it has been through a thorough QA process. We collect a huge amount of data which will contribute to our analysis.
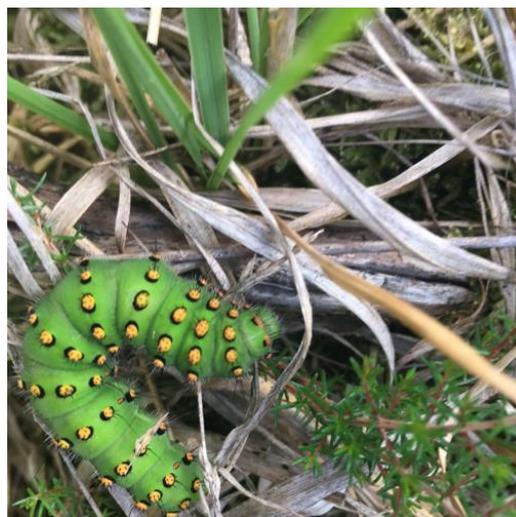
So what data is available now?

- Baseline vegetation survey data for all sites and also some data for those sites which have had a repeated survey.
- Soil survey data 2011-2015
- Data collected from our weather stations can be found on the Met Office: Weather Observations Website
- Air quality data can be found UK AIR data (UKEAP)
- Butterfly data can be found here: http://www.ukbms.org/Obtaining.aspx

We will continue to keep updating you on what has been published on the LTMN Access to Evidence Pages.

Planning for vegetation surveys 2018

Planning for our internal vegetation surveys 2018 has already begun. We will be advertising the surveys and provide you with a list of sites and dates in April 2018.

Annabel Osbourne (NE): LTMN Chobham Common NNR Survey 2017: Emperor Moth Caterpillar

Taking the long view: An introduction to Natural England's Long Term Monitoring Network 2009-2016

The LTMN team has just published our first LTMN report which summaries the network and what we do. If you would like to read the report please follow this link:
http://publications.naturalengland.org.uk/publication/4852904640380928

More information

LTMN Access to Evidence Site: We have just updated all of LTMN pages on the Access to Evidence catalogue. Here you can learn more about each of the protocols, the sites and how you can be involved. Click here to see the pages.

If you have any questions please contact us at LTMN@naturalengland.org.uk