

Annual Report on the Environmental Change Network (ECN)

2003-2004

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The Environmental Change Network (ECN) is a multi-agency, long-term research program established in 1992. Government departments and agencies sponsor the network. Environmental Research is responsible for the running of the Alice Holt site on behalf of the Forest Authority.

The need for long-term monitoring to analyse and predict environmental change was the major motivation behind its set up. It was founded in the belief that integrated monitoring will produce a more comprehensive picture of the environment, and therefore be more likely to detect differences than considering several disconnected components. Physical, chemical and biological data are being recorded at all sites using strict protocols. Integration and analysis of these data sets will help identify environmental change and improve understanding of its causes.

Objectives

- To provide a range of sites producing reliable uniform comparable long-term data by means of measurement at regular intervals variables identified as being of major environmental importance,
- To provide integration and analysis of these data sets to identify and improve understanding of the causes of environmental change,
- To make long-term data sets available for research and prediction of future change.

Measurements

- Meteorology
- Precipitation Chemistry
- Atmospheric Chemistry:
 - Ozone
 - Oxides of Nitrogen
 - Ammonia
 - Nitrous oxide
- Soil survey and classification data : baseline survey
- Soil characterisation and change
- Soil solution chemistry
- Soil biology
 - Tipulids
- Vegetation
 - semi-natural
 - baseline data
 - coarse-grain (every 9 years)
 - fine grain (every 3 years)
 - woodland (tree growth and seedlings)
- Vertebrates
 - rabbits
 - deer
 - bats
 - frogs
 - birds
- Invertebrates
 - moths
 - butterflies
 - spittle bugs
 - ground beetle

All the protocols were carried out in accordance with the standard procedures and quality control exercises (QC). The data are submitted electronically to CEH for inclusion in the annual data digest and the summary database available on the WWW.

Data Requests

Access to the ECN web pages has increased again to 7,000 hits per month. The number of people accessing the summery database has also increased to 1400 hits. There have been 11 individual requests for licences to allow access to Alice Holt raw data ranging across all the ECN protocols.

The ECN butterfly data was again submitted to Butterfly Conservation for inclusion in “*Hampshire and Isle of Wight Butterfly and Moth Report.*”

Data have been presented at JNCC Air Pollution and Ecosystem Change symposium Caernarfon 28-29 October 2003. [WWW.jncc.gov.uk/habitats/air_poll/caernarfon/broadmeadow.pdf](http://www.jncc.gov.uk/habitats/air_poll/caernarfon/broadmeadow.pdf)

Vegetation

2003 has been relatively quiet following the previous year’s intensive vegetation surveys.

- Woodland recording of tree heights and diameters was completed in
- early spring and the remaining 15 lost plots were relocated and surveyed in the summer.
- All vegetation data for the 2002 survey has now been submitted to
- ECN for inclusion in the data base.
- All vegetation data for the Alice Holt site has now been added to the
- new ECN vegetation data base.
- Analysis has begun on the vegetation data to use chronosequencing to study vegetation changes to the understorey of CP and OAK, and to examine survival after forest practices. (*Appendix 2*)

G.I.S

- All vegetation plots are now digitised on GIS.
- We are examining ways of linking the vegetation data base to GIS
- enabling us to map vegetation communities within Alice Holt.
- Bat data is now mapped on the GIS enabling spatial analysis
- The ECN soil survey has been digitised and is being made available for
- use. The data has also been passed to Bill Raynor for use in the FC
- soil database he is building.

Other ECN-related research

In addition to core protocols, other ECN-related research has also been ongoing:

Ammonia Monitoring

Alice Holt forest as both an ECN and a Level II site is monitoring both Ammonia and Nitrous oxide as part of the DETR Ammonia Monitoring Network.

Quality Control (QC)

ECN has QC procedures to cover all phases of monitoring and data handling. As part of these checks the analytical laboratories at Alice Holt are participating in the UK Acid Waters Network AQC programme. The laboratory is scoring very highly for quality.

Site managers meeting

The annual site managers meeting was held at the Sourhope site. In addition to the usual business matters it was decided to abolish the existing tipulid protocol and move to a less intensive (and hopefully more reliable) method involving sampling from the moth trap.

Moth Data

Angie Pitts was employed in spring 2003 to analyse the data from the moth trap and met station, to examine the effects of climate change on moth numbers and the implication for broadleaf trees. The findings were presented in a poster at the Annual BES conference in Manchester. (*Appendix 1*) Angie is currently writing up the data for publication under a second contract.

An article on the moth analysis will appear in the 10th birthday addition of ECN News.

2004-2005

Vegetation

Nine extra vegetation plots are being installed in existing oak plantations to replace those felled by FE and enable a good representation of different aged oak plots to aid chronosequencing work.

Chronosequencing

Analysis of the ECN vegetation data in conjunction with vegetation surveys from Thetford and Clipstone is under way to examine changes in Elenberge indices at various stages during crop rotation. This is being carried out for both oak and CP. Significant statistical differences have been found across the age ranges, mainly in the CP. (*Appendix 2*)

Pollen monitoring

ECN sites are to install Tauber pollen traps as part of the European Pollen Monitoring Program (EPMP) being carried out by the University of Hull.