



Climate Change and Adaptation in the West Midlands
Notes of Seminar
25th November 2009

Andy Neale, Natural England
- Key Issues for Land Managers

NE policy: increase resilience of natural environment to climate change (CC).
National Character Areas project: suite of projects looking at vulnerability of biodiversity

- Phase 1: Cumbria High Fells, Broads, Dorset Downs, **Shropshire Hills**
- Phase 2: five new areas – focussing on vulnerability, broaden beyond biodiversity, analysis of ecosystem services, avoid cross-compromise of interests, develop partnerships

Vulnerability based on: exposure, sensitivity, predicted impacts, adaptive capacity

- identify > map > assess CC impacts > develop response strategies
eg increase diversity, connectivity, core areas, deliver ecosystem services.

Changes in agriculture may outweigh direct impacts of CC.

Project review – lessons from all 9 character areas will give priorities for adaptation and help develop adaptation responses for all NCAs.

Helen Read, City of London
- Case Study: Burnham Beeches

Specific study at Burnham Beeches SAC. BB owned by City of London – awarded Beacon status for CC.

BB 220 ha woodland, wood pasture, heath, mire. Main tree is beech.

“SPECIES” model (European)

- 2 global climate models, for 2020s, 2050s, 2080s

- 105 species modelled (90 plants) – habitats: woodland, heathland.

Woodland: beech more resilient than thought, but may suffer growth reductions. Most sensitive trees are birch, sycamore, ash, oak. Woodland will become more open and lower canopy. Beech susceptible to drought – outcompeted by sessile oak. Ensure next generation of canopy species survives to pollard.

Southern genotypes more tolerant? – genetics at BB unknown. Type of wood and decay important for biodiversity.

Heathland: wet heathland most vulnerable (drying out). Tendency towards grass dominance rather than ericaceous plants. Under high scenarios, heathland difficult to maintain – structure important.

Adaptation

- reduce other stresses
- habitat restoration: buffers
- increase connectivity
- increase habitat heterogeneity
- focus conservation effort on North facing slope
- Introduction of wide range of genotypes
- Reintroduce species eg lime
- Introduce new species eg southern oaks

BB management – manage tree regeneration; monitoring; prevent invasion of heath by trees/shrubs; raise water table; maintain structure.

Issues beyond site managers

- presumption against non-native species eg holm oak
- what species are good replacement for natives?
- Increase numbers of reserves and connectivity
- Other research

Colin Wilkinson, RSPB

- Case Study: Otmoor

Managing wetlands to adapt to CC.

Impacts of CC

- o A) sea level rise
- o B) drier summers
- o C) increased frequency of storms – changes in FRM
- o D) increased temperatures – habitats less suitable

Responses -

A - create new FW wetlands safe from coastal flooding

- translocate immobile species

B – reduce water loss – control structures

- store winter water
- improve WQ in rivers

C – FRM to aim for minimal impact

- multifunctional benefits of flood storage areas
- compensatory habitat

D (on-site responses) – maintain microclimates

- improve habitat quality
- enlarge sites
- translocate species

(off-site response) – make countryside more permeable

Otmoor –

Reedbed is winter storage reservoir, used to maintain wet grassland.

Large scale maximises hydrological control – isolated from river.

Habitat managed to maximise wader productivity – predator control measures undertaken.

Wet features being created to greater depth.

Management plans must allow for greater flexibility - timing of routine operations is changing.
Otmoor sits within wider landscape – Ray Valley.

Messages – existing protected areas remain critical

- habitat blocks must be bigger
- actions needed now
- need for translocations
- do more/faster

Discussion

Q. How do you express natural environment as a priority for leaders? How to get resources needed?

Cost of cleaning up Cockermouth vs cost of restoring Cumbrian fells?

Marketing is important – sell to senior managers. Financing natural environment must be embedded, as supports system.

Q. Not business as usual – what are key messages for changing land management?

Messages on CW's last slide, and selling ecosystem services.

SSSIs: little flexibility in management allowed– based on old description of site. Timing of livestock on land will change. W&CA will need revising.

Too few good sites – need to increase habitat resource, then can be more relaxed about management.

Cannock Chase – need to identify CC implications – site managers don't have time.

Guidance needed on natives/non-natives, and translocations (potential pest problems).

More accessible information needed – but how robust is the information?

Need to think a long way ahead.

Risk assessment in relation to CC – identify no-risk options eg buffering.

Q. Habitats Regulations Assessment – air quality impact on sites? – lack of knowledge.

How will CC affect air quality?

Difficult to identify thresholds. Compound stresses – CC/pollution/etc.

Mike Morecroft, Natural England - Monitoring Change at a National Level

Monitoring is repeated measurement over time.

Role of monitoring – provides baseline, evidence of change, measure extent/rate of change, test effectiveness of intervention, separate signal from noise, investigate relationships between variables, provide basis for other studies.

Attribution can be difficult.

CC adaptation – cope with uncertainty, lead to adaptive management approach.

National monitoring schemes – many, physical and biological variables, few specifically CC. Greater detail, fewer sites.

Atlases (distribution data) – shows northward movement.

Countryside Survey – planned, stratified, random

- soil Carbon, little change
- no clear impacts of temperature on plants (slow dynamics, other factors)
- effect of wet weather in 2007

Environmental Change Network – 12 terrestrial sites (& freshwater) – range of physical/biological monitoring, some continuous

- temp increased at all sites 1992-2007, also rainfall increases
- sulphate decline, pH increase
- butterflies: increased spp/nos at upland sites, due to warming
- carabid beetles: increase in SE, decrease N & W – upland spp suffering from warming
- vegetation: no effect of temperature, probably effects of wet weather

Indicators – clear link to climate: phenology, range margins

- conservation relevance: change in communities (attribution difficult)
- need range of indicators

Adaptation Indicators – natural environment should be included.

Monitoring is essential – climate effects on invertebrates, widely detected – fewer effects on plants, slower response.

John Walker, Regional Observatory - Monitoring at a Regional Level

Why measure at regional level? – to know what is specific to region

- understand/track change
- see need to intervene
- demonstrate need for action to regional bodies
- identify challenges for the region

Existing tools – RSS, NI, PSA, WMBP work

Future drivers – Strategy for West Midlands – need to get biodiversity embedded

Challenges – what is biodiversity?/why is it important?

- consistent regional level data needed, sufficiently detailed for local needs
- timely, regular data

How use the information? – identify successes

- highlight problems and challenges
- evidence based policy
- influence partners(eg Biodiversity Adaptation leaflet)

Tim Sparks, Woodland Trust - National Phenology Network

UK Phenology Network – see website: www.phenology.org.uk

51 of last 58 months warmer than average.

Cool years – late oak leafing, chaffinch nesting.

Oak first leaf, Surrey, now 3 weeks earlier than 60 years ago.

Anne Phillips, Walsall – 1976-2009 – 34 events tracked for 20+ years – 20/34 significantly earlier.

Trends match up across wide geographical area – consistent response.

Phenology easy to record, understand, responsive to temperature.

Much evidence of shifting seasons in response to warming climate.

Species are not shifting in parallel – potential problems.

Sell these messages to those with influence,

Duncan Sivell, Buglife

- Monitoring Changes Using Invertebrates

Invertebrate response to CC.

Mosquito *Culex pipiens* – responds to North Atlantic oscillation!

Silver Y moth – migrant – migration increasing – northward movement.

- S: earlier arrivals
- N: increased abundance
- climate in Mahgreb affects

Garden Tiger moth – declined – more concentrated in N Britain

- related to wet winters/warm springs.

Tansy Beetle – R Ouse, York – adults tolerant of floods (go into soil) – but larvae knocked out by summer floods.

Butterflies – generalists/specialists react differently eg comma moving north – mountain ringlet range contracting.

Invertebrate response to CC – generalists benefit, specialists suffer.

Monitoring change:

- species presence/absence
- species richness
- species diversity
- population monitoring
- spatial studies

Groups readily monitored – butterflies, dragonflies, moths, ground beetles, hoverflies, ladybirds, grasshoppers/crickets.

Sources – LRCs, recording schemes, provisional atlases, NBN Gateway, local entomologists.

CC not the main issue for insects – land use change is – need to manage for mosaics of subhabitats, and ensure connectivity.

Workshops

See separate notes.

Andrew Heaton
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