



# Keeping Rivers Cool – creating riparian shade

Rachel Lenane  
Environment Agency, England



# Programme Objective

Promote riparian shade as a climate change adaptation measure to benefit salmon and trout by reducing river temperatures throughout upland England and Wales.

Inspire action through demonstration projects, a strong evidence base, guidance and mapping tools.







# Talk Outline

- ➔ The Evidence
- ➔ Keeping Rivers Cool tools
- ➔ Demonstration projects
- ➔ Obstacles & risks
- ➔ Next steps

# Gathering the Evidence

## Salmon & brown trout and T°C

➔ Critical temperature ranges:

>22.5°C



>19.5°C



➔ 22°C for >7 days lethal for b. trout

## UKCP09 Climate Projections

➔ Rise of 2-4°C by 2050

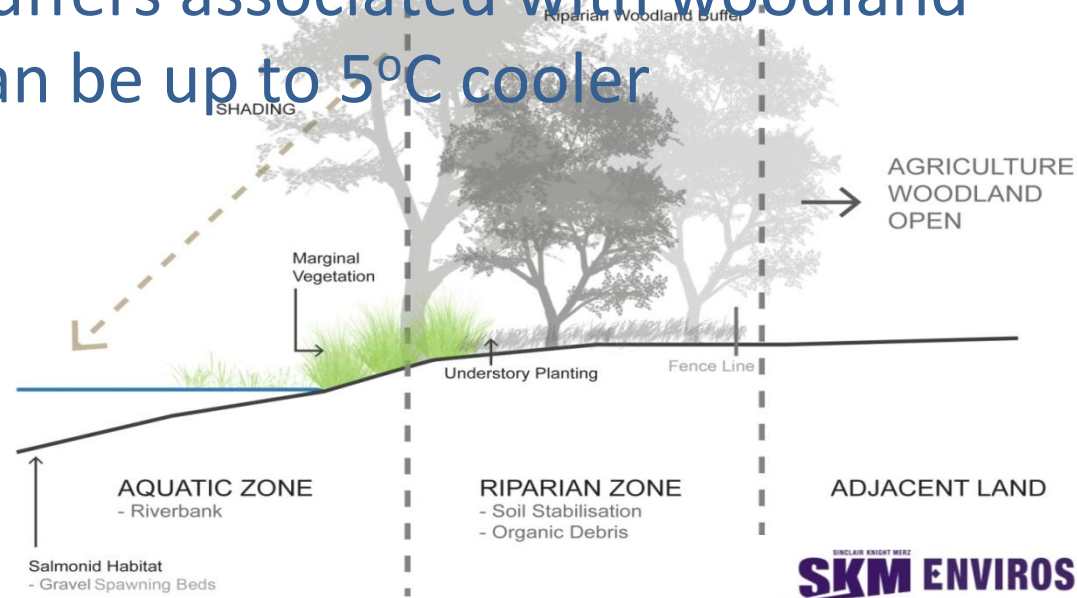
➔ >31°C recorded in S. England

➔ Shaded channels are 1.5°C lower than open reaches



# Effects of riparian trees on summer water temperatures:

- ➔ Shaded channels are 1.5°C lower on average than open reaches
- ➔ Or 2-3°C in maximum temperatures
- ➔ Buffers associated with woodland can be up to 5°C cooler



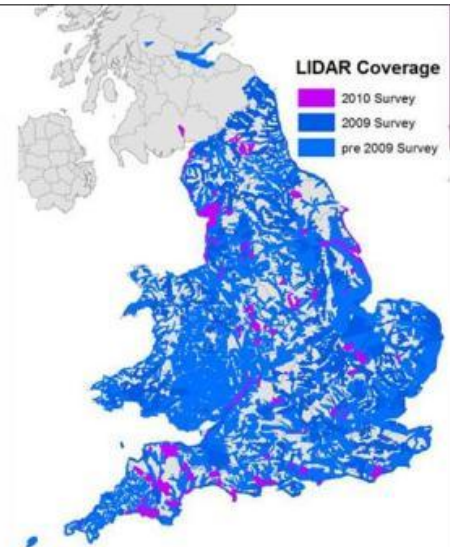
# Do we need more riparian vegetation in England and Wales?

➔ Commissioned LiDAR data to tell us about extent of riparian vegetation in England & Wales



## Geomatics Group LiDAR Coverage ... as of Nov 2010:

- ➔ Original R&D surveys in 1996, operational since 1998
- ➔ More than 65% of England and Wales covered
- ➔ More than 90% of Urban areas covered
- ➔ Elevation accuracy 5 to 15cm



Geomatics  
Group

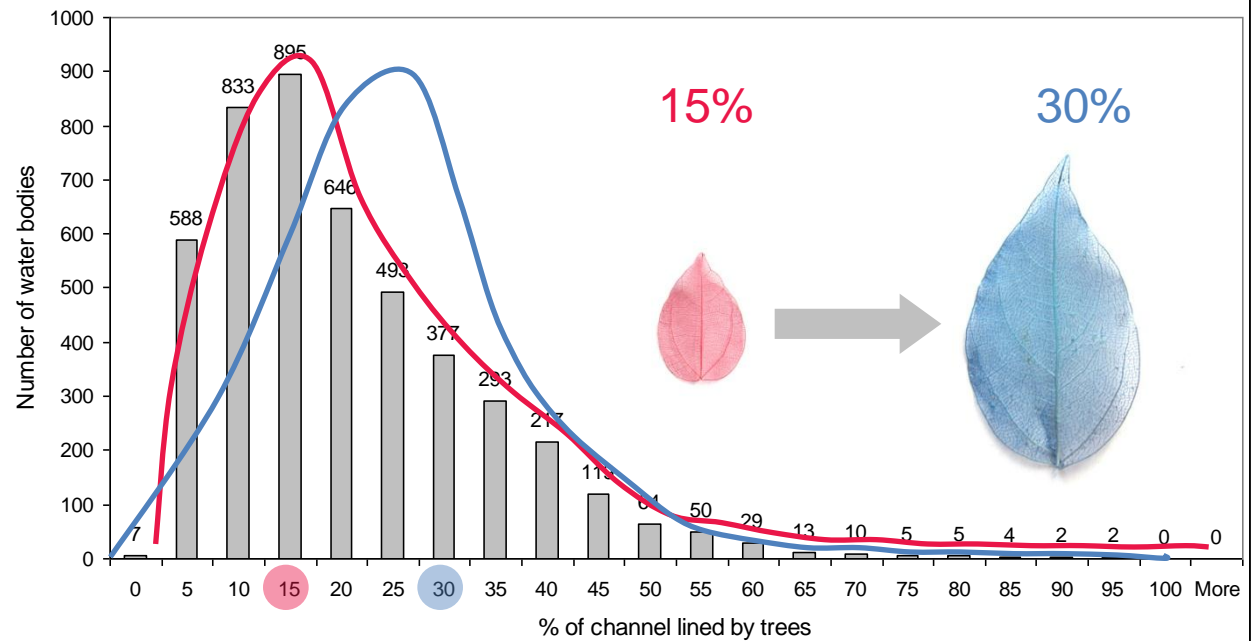
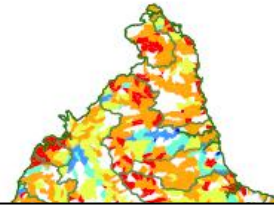
Environment  
Agency

Evidence – Tools – Pilots – Obstacles/ Risks – Next Steps



# Do we need more riparian vegetation in England and Wales?

England and Wales: % of waterways bordered by vegetation > 2.5m



NOTE: Small areas are not waterbodies where 2.5m  
NODATA covers more than 50% of waterbodies

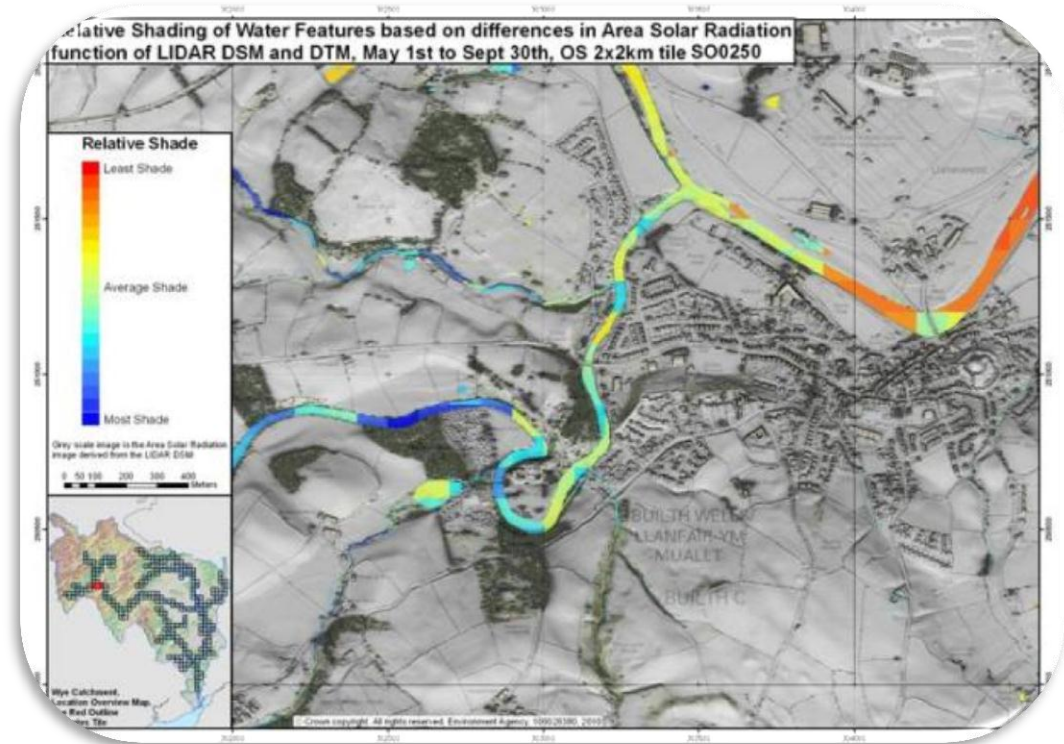
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# Creating tools for partners





# Developing riparian shade maps



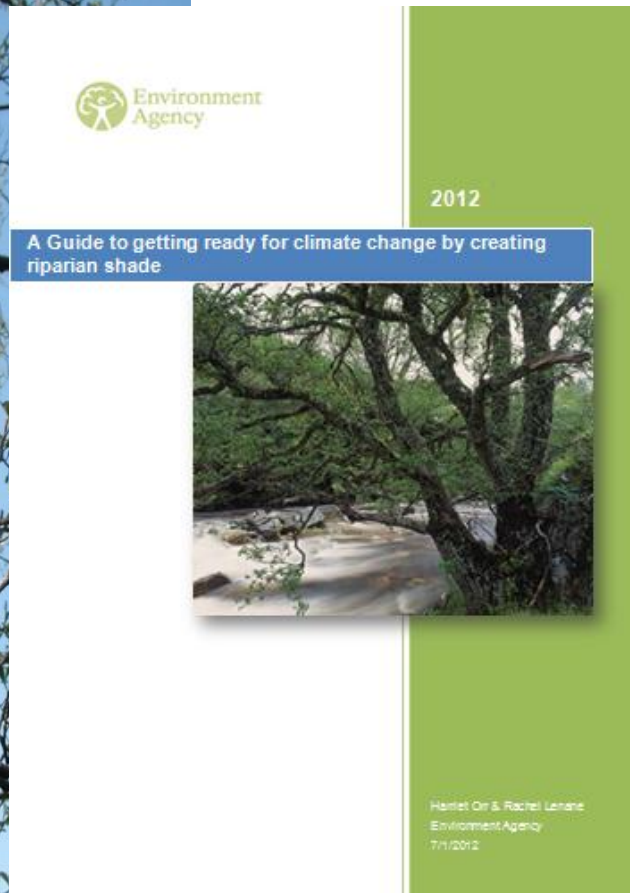
- ➔ Riparian shade maps
- ➔ Show relative shade within a WFD Mgt catchment boundary
- ➔ Used alongside ground truthing and other data sets

Evidence – Tools – Pilots – Obstacles/ Risks – Next Steps



# Developing a guidance manual

- ➔ Guidance manual includes:
  - ➔ The science behind creating riparian shade
  - ➔ The mapping tools available
  - ➔ Where to target riparian shade
  - ➔ Funding sources available
- ➔ Distributed to landowners and partners (Woodland Trust, CCW, CEH, NE, Rivers Trusts, WLTs, on RESTORE wiki)





# Rivers Trust catchment mapping portal

## <http://maps.theriverstrust.org/SMP/Map>

Rivers Trust - WFD Stakeholders' Mapping Portal

wylye Placenames

Active Layers

All Layers

Double click or check a layer....

ECOLOGY

KRC


- ☒ Keeping Rivers Cool Catchments
- ☐ Adur Ouse Riparian Shade
- ☐ Derwent Humber Riparian Shade
- ☐ Dove Riparian Shade
- ☒ Hants Avon Riparian Shade
- ☐ Ribble Riparian Shade
- ☐ Tyne Riparian Shade
- ☐ Tamar Riparian Shade
- ☐ Wye Riparian Shade
- ☐ Vegetation Objects

BASEMAPPING

WFD

ISSUES

Layer Catalogue



Hampshire Avon

Hampshire Avon

A36

A303

Wyllye

High Street

Church



# Developing communications

➔ Fish magazine, EU RESTORE wiki, River Restoration Centre, Defra biodiversity news

➔ River Basin bulletin, quarterly 'keeping rivers cool' newsletters, National cascade

➔ Conferences





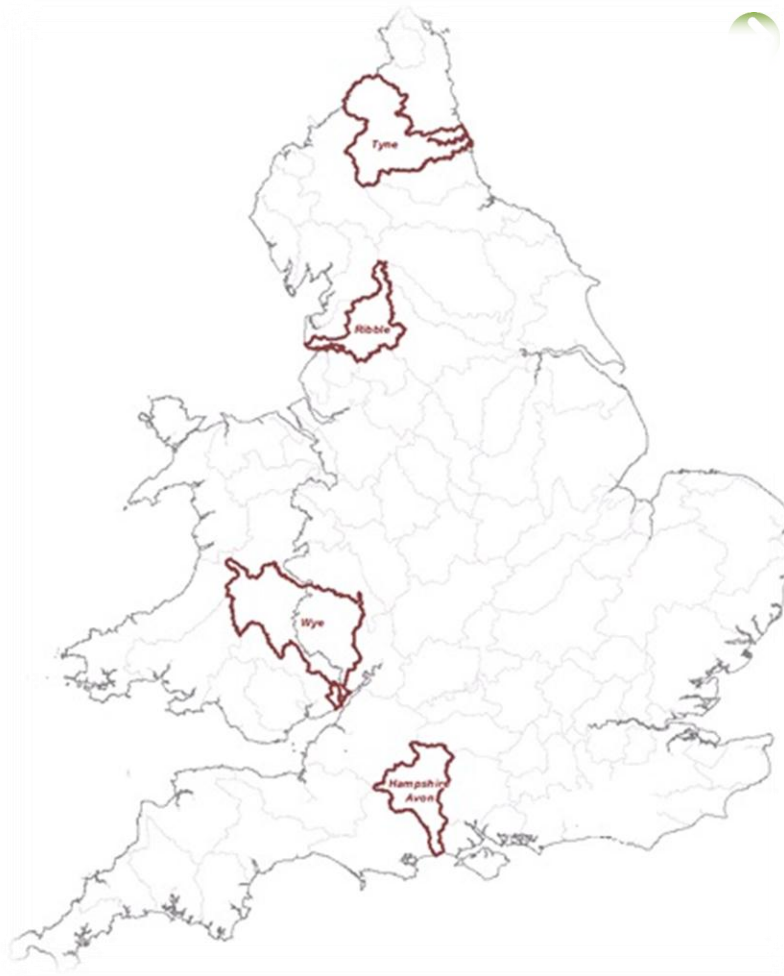
# Moving from maps & manuals to action on the ground



Evidence – Tools – Pilots – Obstacles/ Risks – Next Steps



# Awarded funding & selected pilot catchments



## Objectives:

- ➔ Create case studies
- ➔ Increase riparian shade
- ➔ Demonstrate ways to do it
- ➔ Monitor results



# Progress in Hampshire Avon

- ➔ £4k 2012/13 – 80m fencing, 200 trees
- ➔ £20-40k 2013/14





# Progress in Herefordshire

- ➔ Lugg & Arrow (Wye catchment, Herefordshire – eng/ wales border):
  - ➔ Natural regeneration only (SSSIs SACs)
  - ➔ ~£70k for fencing





# Progress in the Ribble

- ➔ 2012/2013 £288k (EA spend) +£81k (contributions in kind)
- ➔ 35,000 trees & 15km fencing (target 37,000 trees, fencing target 13km)
- ➔ 2013/14 Aiming for ~22,000 trees and 15km fencing (c. £115k)



Planting Volunteers (courtesy of the Ribble Rivers Trust)  
Evidence – Tools – Pilots – Obstacles/ Risks – Next Steps

# Obstacles & Risks

- ➔ Resources
- ➔ Ash die back
- ➔ Procurement process
- ➔ State aid



- ➔ Landowner agreements
- ➔ Internal change
- ➔ Weather
- ➔ Beavers??



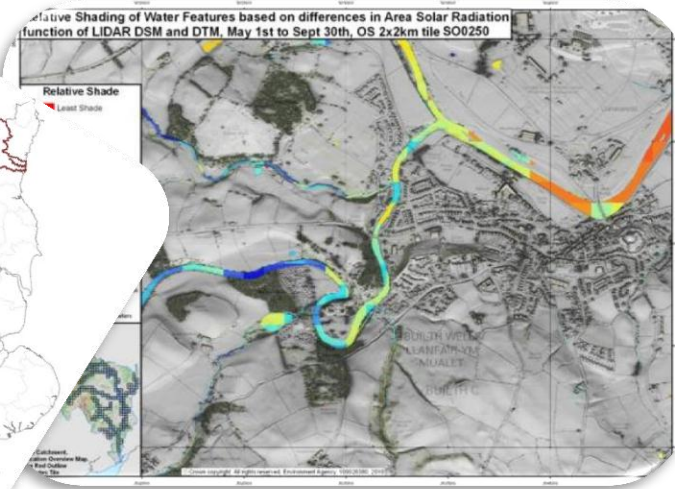


# Next Steps

- ➔ Monitoring plan
- ➔ External funding
- ➔ Distribution of riparian shade maps
- ➔ Further communications
- ➔ Working riparian trees as a measure into CAP reform, HLS, EWGS
- ➔ Integrating the measure into river basin plans

# Thank you for listening!

## Any questions?



“I have seen the tree planting at Durnford today when I walked up and fished beat 12, the hatchpool. I am very happy with what has been achieved and have no doubt it will benefit the river environment without impacting adversely on our anglers. Many thanks.”

*e-mail to Environment Agency from Vice Chair of Salisbury & District Analina Club (18/04/2013)*

