

# Mammals, Ecology and the Economy

Keynote Presentation to the  
South Asian Small Mammal Conference  
Kathmandu, Nepal, 27<sup>th</sup> – 29<sup>th</sup> August 2017

Dr Debbie Bartlett CMLI FCIEEM



# CONTENTS

- Introduction
- Framing – are we asking the right question?
- The current ‘LS’ debate
- Examples from the UK/Europe
- Suggestions for better integration in the future





# Small mammals supporting ecology and economy in South Asia?

✓ supporting the ecology

But the economy?

Eco-tourism?







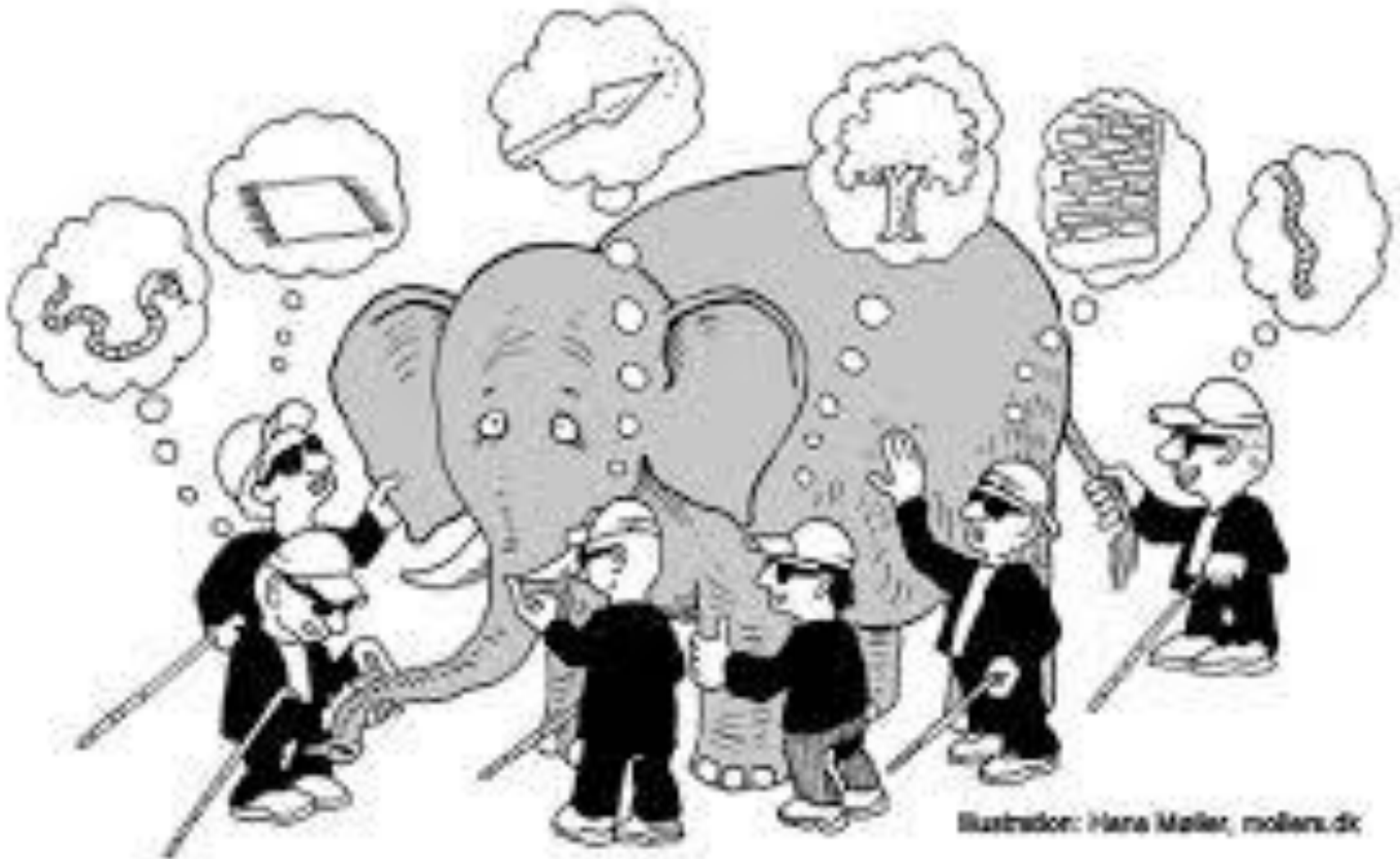
# Framing the topic



how to approach this  
topic and come up with  
useful ideas?



How many of you are zoologists?  
taxonomists?



I'm a landscape ecologist interested in conservation .. (and not just mammals)



BUT everything I do involves **people**



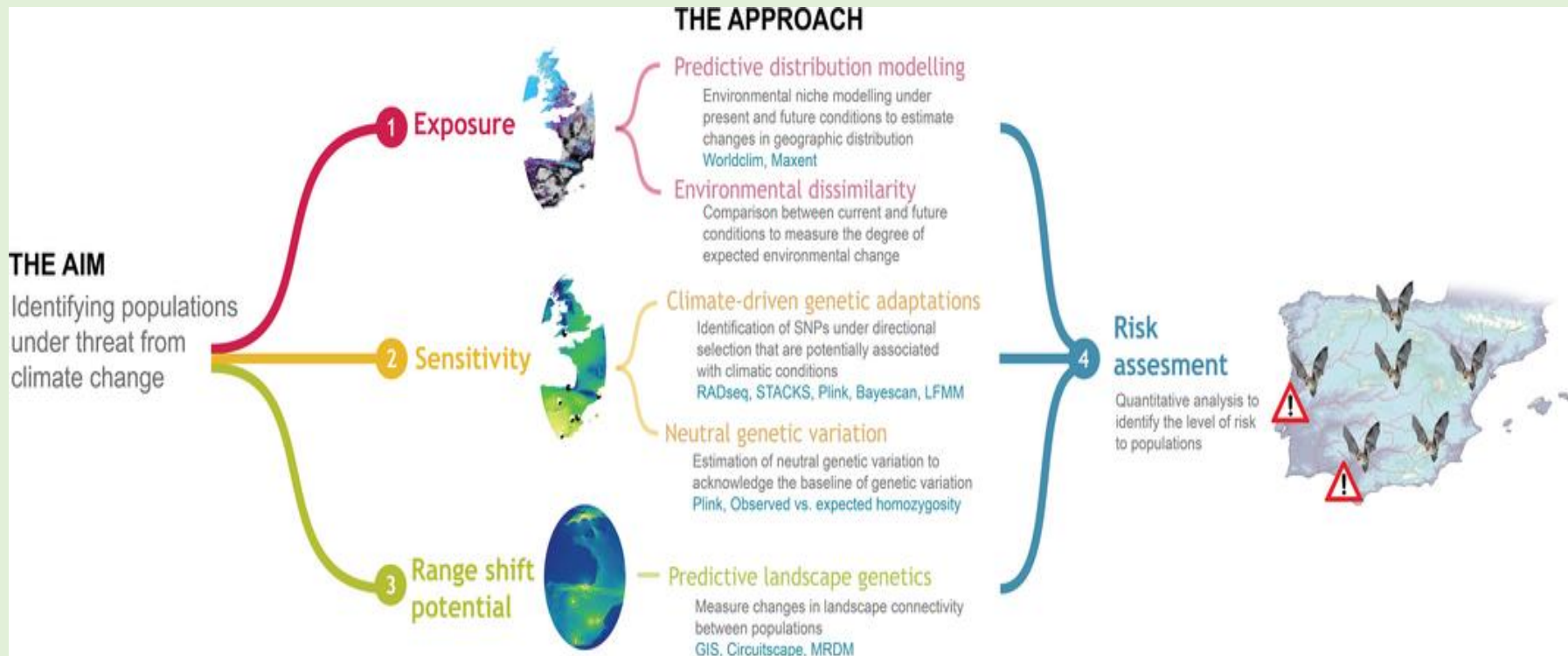
# So I'm interested in what the **economy can do for wildlife and people**

- So what are the interactions between the economy and wildlife?
- The first step in conservation is to UNDERSTAND what is affecting populations



**H**abitat  
**I**nvasive species  
**P**opulation (human)  
**P**ollution  
**O**ver harvesting

# An integrated framework to identify wildlife populations under threat from climate change

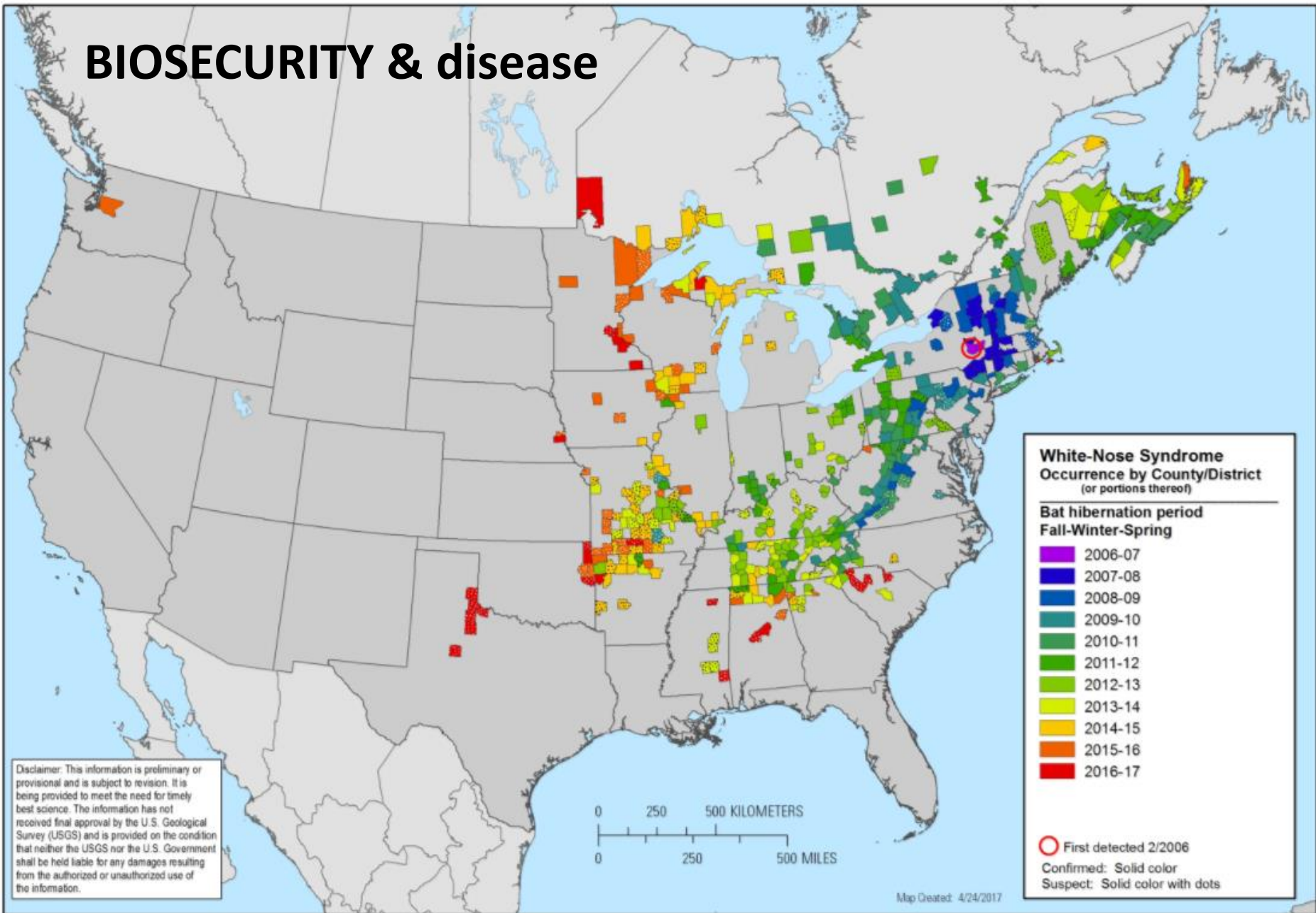


## Molecular Ecology Resources

25 JUL 2017 DOI: 10.1111/1755-0998.12694

<http://onlinelibrary.wiley.com/doi/10.1111/1755-0998.12694/full#men12694-fig-0001>

# BIOSECURITY & disease



Citation: White-nose syndrome occurrence map - by year (2017). Data Last Updated: 4/24/2017. Available at: <https://www.whitenosesyndrome.org/resources/map>.

<https://www.whitenosesyndrome.org/resource/updated-white-nose-syndrome-map-april-24-2017>



**H**abitat

**I**nvasive species

**P**opulation (human)

**P**ollution

**O**ver harvesting

# Aichi Biodiversity Targets

*Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity*

## **Target 11**

By 2020, at least 17 % of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Is designating > 20% of a country practical?

# World Population

Projected world population until 2100

**Global food security is high on the policy agenda**

1990



**5.3  
billion**

2017



**7.6  
billion**

2030



**8.6  
billion**

2050



**9.8  
billion**

2100



**11.2  
billion**

Source: United Nations Department of Economic and Social Affairs,  
Population Division, *World Population Prospects: The 2017 Revision*  
Produced by: United Nations Department of Public Information



# How effective are protected areas?

- It depends .....
- Wildlife has this awkward tendency to move around!
- Environmental change means habitats may no longer be suitable for specific species
- “*more, bigger, better and joined up*” areas of habitat are needed
- But how can this be achieved with pressures of population and development?
- England BOAs and NIAs (but lines on a map)

# Views on Protected Areas

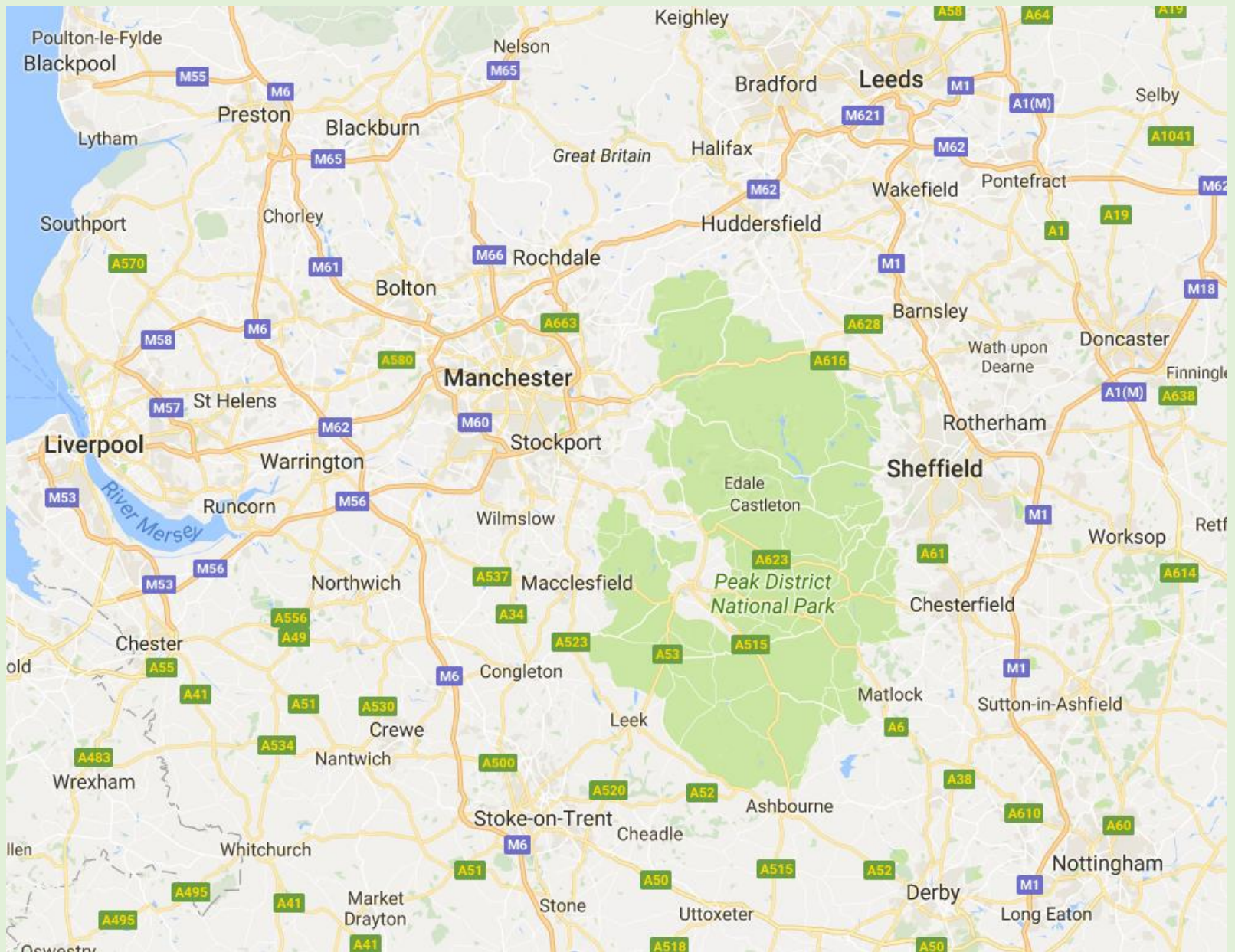
Crofts R (2004) Linking Protected Areas to the Wider World: A Review of Approaches.  
Journal of Environmental Policy and Planning 6 (2) pages 143 - 156

## **Nature Conservation view:**

- Too few
- Too small
- No more tourist facilities
- Better protection
- More involvement
- Too much damage
- Too few controls
- Locals negative
- More conservationists

## **Community View:**

- Too many
- Too large
- More visitor facilities
- Less protection
- Less involvement
- They stop development
- Too many rules
- Locals ignored
- Should be run by locals



38,000 live in the National Park and there are more than **10 million** visitors a year



# The 'LS' debate

## Land Sparing

- Increasingly intensive high-yielding agriculture
- uses less land
- meets demand for food
- leaving greater areas of 'natural' habitat untouched
- more efficient (more profit fewer jobs)

## Land Sharing

- low-yield farming
- Widely spread across the landscape
- enables biodiversity to be maintained
- less efficient
- maintains livelihoods
- more jobs but at lower wages

# So what can we do?

Lets go back to thinking about (terrestrial) HABITAT  
vegetation with associated wildlife

Is it NATURAL?

Almost certainly not .....

It's the result of all the environmental changes  
including **human activities** over millenia

# Two approaches:

## NGOs

Buy land

replicate farming systems  
no longer economic

to conserve the wildlife  
that had developed in  
harmony with the system

How?

Volunteers

Subscriptions

## Agri-environment schemes

farmers own/rent land

are paid to maintaining  
specific aspects of the  
countryside

rewarded for not carrying  
out PDOs

How?

paid from taxes

(Europe)



# What impact does agricultural intensification have?

More fertiliser and pesticides less:

- insects ↓ food for bats and other insectivores
- wild plants ↓ food for insects
- seeds ↓ food for rodents and birds

More intensive livestock production less:

- insects ↓ food for bats and other insectivores
- grassland
- fodder crops







# Hay meadows





# Winter food for livestock

Also supports:

A diversity of plants

Ground nesting birds  
sky lark, waders

Mammals

mice, voles, shrews,  
hares, hedgehogs, foxes,  
badgers, rabbits, bats

A wide range of insects

Owls and kestrels





**Silage:** high energy fermented short rye grass wrapped in plastic cut early, several times, low value for wildlife



**Farmers paid to maintain hay meadows in important areas**

# MANAGING WOODLAND AS COPPICE IS IMPORTANT FOR WILDLIFE

Coppicing may look drastic but is essential for much of our best-loved woodland wildlife which may be threatened with extinction if this is not continued.

In this traditional management system, trees are regularly cut to the ground and re-grow with several stems, providing the wood needed for a wide range of products.

Time between cuts varies depending on the intended use of the wood but needs to be regular so that there are always some open areas. Here warmth and light can reach the ground.

This encourages plant growth and insect activity - but this effect decreases yearly as trees re-grow until branches meet overhead, and light can no longer reach the woodland floor.

So coppice cycles, with some cut each year, must be maintained, to ensure continuity of open space.

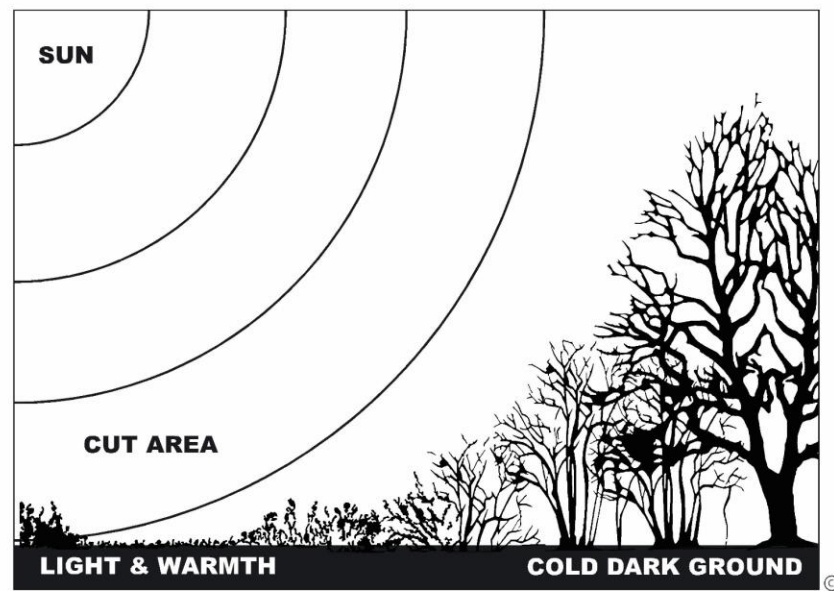


Diagram showing how coppicing affects ground temperature and light levels

**Help wildlife by supporting the coppice industry  
buy local logs, charcoal and other wood products.**

Local Stockist





*“A wood that pays is  
a wood that stays”*









# Grazer Selectivity: Benefits for Livestock, Habitats and People

Bill Grayson  
Morecambe Bay Conservation Graz

Keywords: conservation grazing, dietary

## Northumbrian Water's Partnership with Flexigraze – Helping to Get Hooves onto the Ground for the Benefit of Wildlife

Mark Morris CEnv MCIEEM  
Conservation Advisor, Northumbrian Water



Figure 1. Cattle graze

## Sheepwrecked, Sheepracked or Sheeprought? – Thoughts on Sheep and the Future of the British Uplands

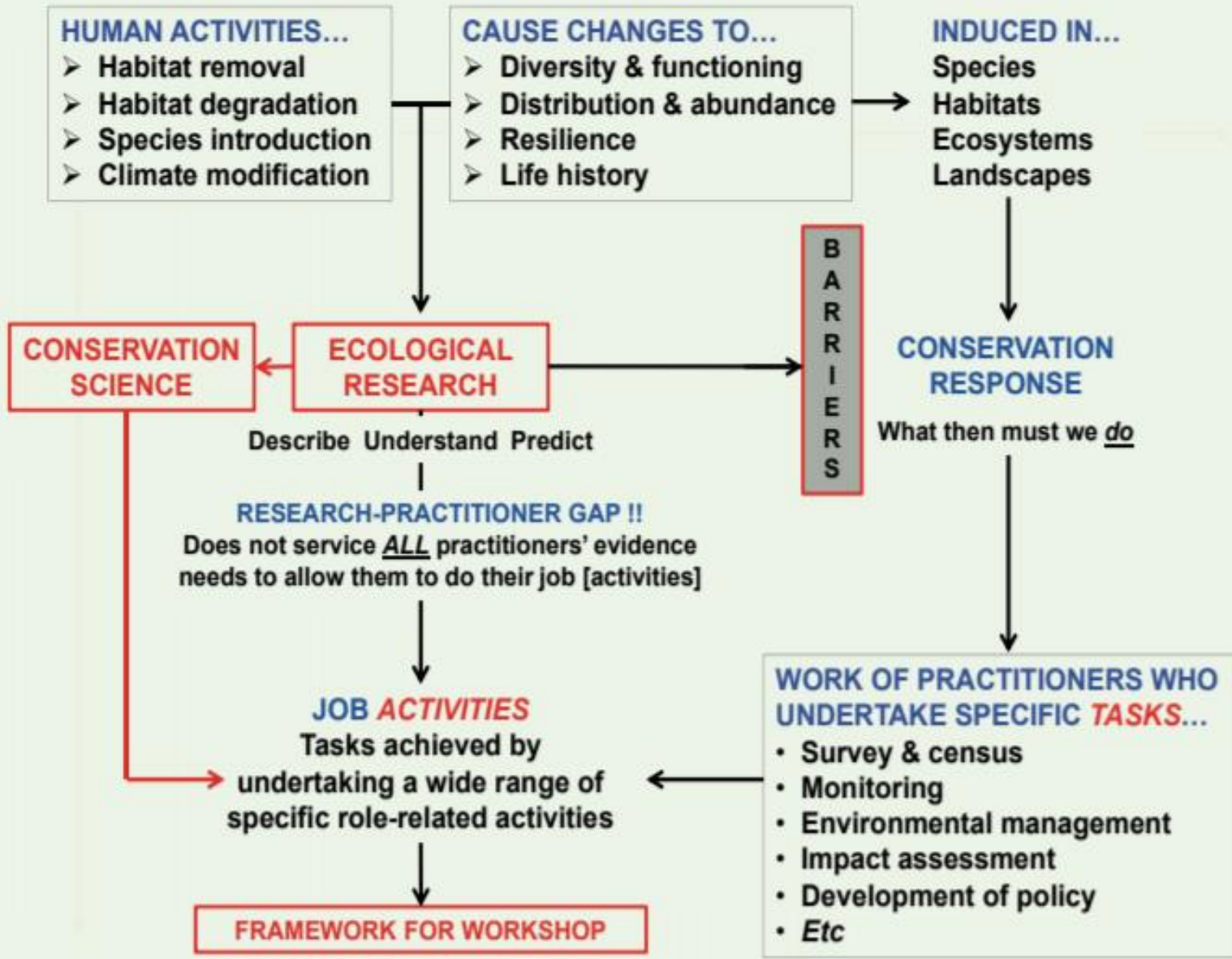
Hugh Watson FCIEEM(rtd)  
(retired)

Keywords: breeds of sheep, fleece, grazing, shearing, shedding, uplands

One of the pleasures of retirement has been the opportunity for more hill-walking and last August I found myself on the dramatic central section of Hadrian's Wall where it follows the tops of the crags across the wide open 'wastes' of west Northumberland. Contemplating the livestock scattered over the landscape below and pondering on the life of the people of the area before, during and after the three hundred and fifty years of the Roman occupation, it



Some individuals of more primitive sheep breeds, such as these Marx Loaghtans, shed their fleeces naturally in spring. Photo credit Hugh Watson.





Is conservation about returning to  
the past?



# The basics ....

The wildlife we value is not 'natural'

It has evolved with human land management practices

Altering these affects plant and animal communities

BUT what drives change?

Efficiency ..... profitability .....

If we want wildlife that evolved with traditional practice

**people must be able to earn enough to survive**

# Or moving into a new era?

- Ecosystem services
- Natural Capital Accounting
- Paying for delivering 'public goods' as well as marketable commodities





INDEPENDENT

[News](#) [InFact](#) [Politics](#) [Voices](#) [Indy/Life](#) [Business](#) [Sport](#) [Tech](#) [Culture](#) [Subscribe](#)

The Telegraph

[Home](#) [Video](#) [News](#) [World](#) [Sport](#) [Business](#) [Money](#) [Comment](#) [Culture](#) [Travel](#) [L](#)  
[Politics](#) [Investigations](#) [Obits](#) [Education](#) [Science](#) [Earth](#) [Weather](#) [Health](#) [Royal](#) [C](#)

[News](#) > [UK](#) > [Home News](#)

# How did milk become cheaper than water?

The price of milk has fallen by more than 50 per cent over the past 12 months

[Kashmira Gander](#) | [@kashmiragander](#) | Tuesday 20 January 2015 15:59 GMT | [0](#) comments

[HOME](#) > [NEWS](#) > [SHOPPING AND CONSUMER NEWS](#)

Milk cheaper than water: supermarket price war drives down price of a pint





# The rural economy, livelihoods and wildlife are inextricably linked

**Understanding** the links and **anticipating** change is **vital for any effective conservation action**

- **support** livelihoods that make a positive contribution
- **identify** threats and take action
- **encourage** policy makers to understand the economic value of ecosystem services





Thank you for listening



Dr Debbie Bartlett CMLI FCIEEM  
d.Bartlett@Greenwich.ac.uk

Faculty of Engineering and Science

