

Bats and Windfarms in England

The logo for Natural England, featuring the words "NATURAL" and "ENGLAND" stacked vertically in a white, sans-serif font, set against a solid green square background.

NATURAL
ENGLAND

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Natural England

A large, solid green decorative shape at the bottom of the slide, consisting of a wide, shallow curve that tapers towards the center, resembling a stylized landscape feature or a wave.

Overview



- Natural England
- Eurobats guidance
- Bats at risk from turbines -what is the evidence?
 - bats and landscape use
- How to minimise the risk to bats
 - site selection
 - assessing survey protocol
- Research needs
- Conclusions

Natural England



Non departmental public body formed 2 October 2006

- Natural Environment and Rural Communities Act 2006
 - to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development
- integrates functions of English Nature, the Countryside Agency and the Rural Development Service

4
strategic
outcomes



www.naturalengland.org.uk

Eurobats Guidelines: Siting Impacts



Impact	Summer time	During migration
Loss of hunting habitats during construction of access roads, foundations, etc.	Small to medium impact, depending on the site and species present at that site	Small impact but no evidence that bats migrate long distances in UK
Loss of roost sites due to construction of access roads, foundations, etc.	Probably high or very high impact, depending on the site and species present at that site	High or very high impact, e.g. loss of mating roosts. No evidence that bats migrate long distances in UK

Eurobats Guidelines: Operational impacts



Impact	Spring	Summer	Autumn	Winter
Disorientation through ultrasound emission	Need more evidence that it occurs. Probably limited impact			
Loss of hunting areas because bats may avoid the area	Medium to high impact. May depend on availability of nearby sites of similar value.			Low impact. Most bats hibernating
Loss or shifting of flight corridors	Medium impact. May depend on species present.			Low impact. Most bats hibernating
Collision with rotors	Small to very high impact. Depends on species present.			Low impact. Most bats hibernating

How do bats currently use landscape - broad use?

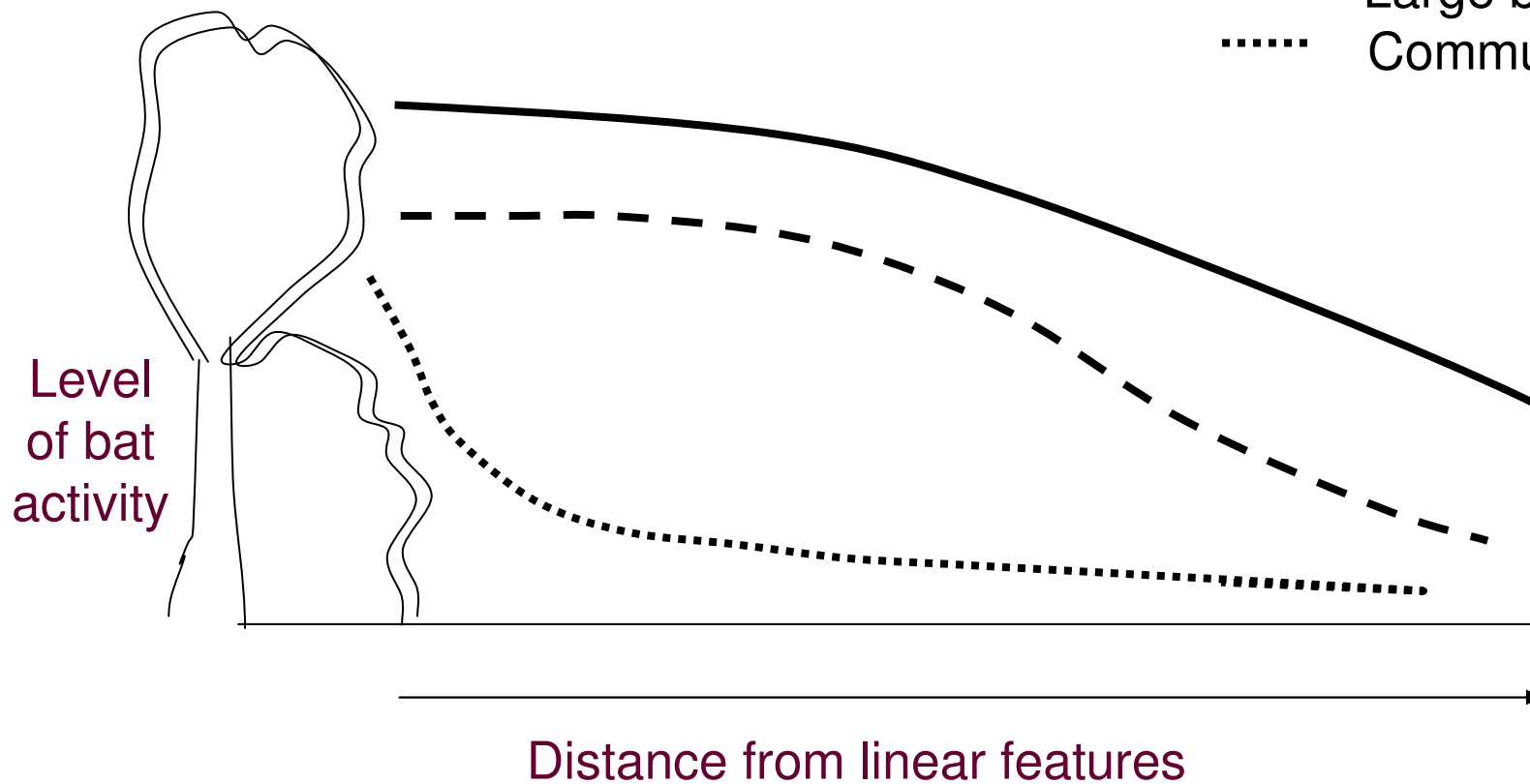


- **memory and opportunistic**
 - traditional flight paths, known forage areas
 - become familiar with landmarks
 - change behaviour when quality of foraging areas change
- **broad habitat preferences/avoidance**
 - prefer woodland, riparian habitats and linear features
 - avoid arable land, moorland and improved grassland
- **how far do bats travel from a roost to forage?**
 - Take account of seasonal variation and energetic requirements e.g. parturition, lactation, juvenile dispersal, swarming and mating, movement to and from hibernacula

How far do bats fly from linear features?



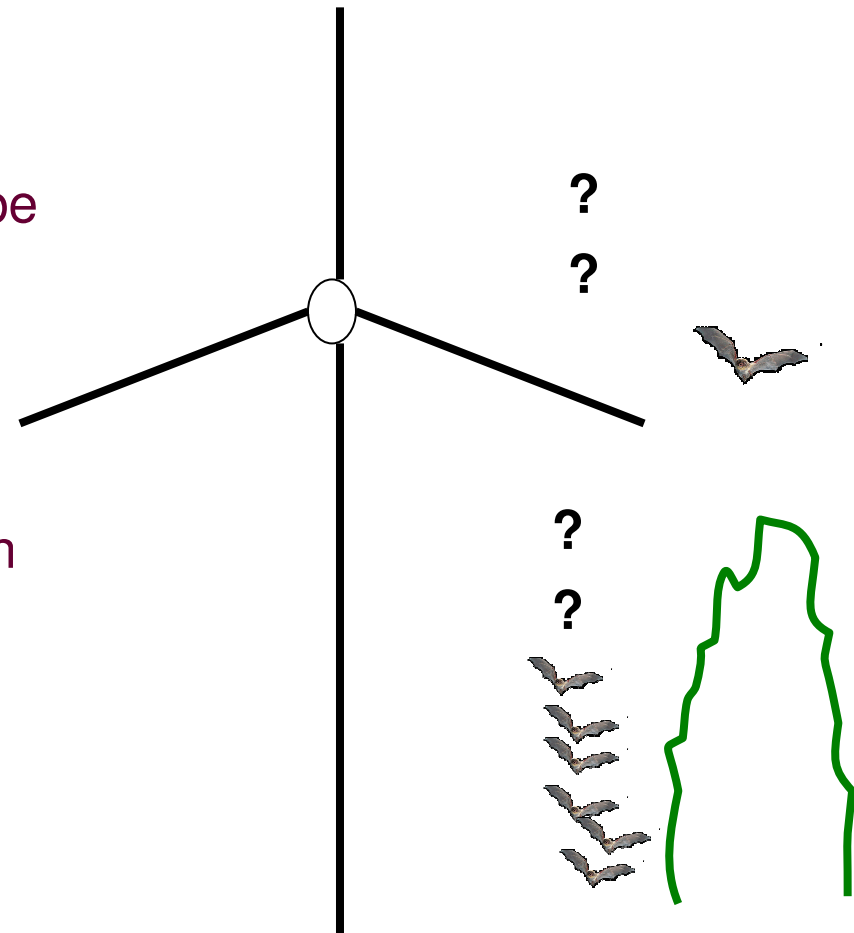
- - Small bat foraging
- Large bat foraging
- Commuting route



How high do bats fly?



- Very little assessment of bat flight height.....but some concerns:
 - Commuting bats may fly higher than when foraging ?
 - Bats that are flying high may not be echolocating?
- Heights when given in literature were mostly observed - rarely measured
- Bat flight heights, where given indicated that most small bats flying in cluttered habitats flew within 0-10m
- Anecdotal records for large bats ranged from 10-120m (e.g. Noctules, Leisler's)
- Need to assess extent of flight height



Will wind turbines harm bats?

- the current evidence is.....



- Some bat species do fly high, though little assessment made of this in UK – unquantified risk
- Some bat species exploit open habitats but many species tend to avoid open habitats - some risk
- Small numbers of bats that generally avoid open areas may cross open gaps - from 110-200m wide - small risk
- Risk if surveys don't consider major events throughout the bat year
- Risk if siting does not take account of bat behaviour and preferred habitats for commuting/foraging
- Risk if no assessment is made of prey availability/variation which might affect seasonal foraging



What might happen in the future?

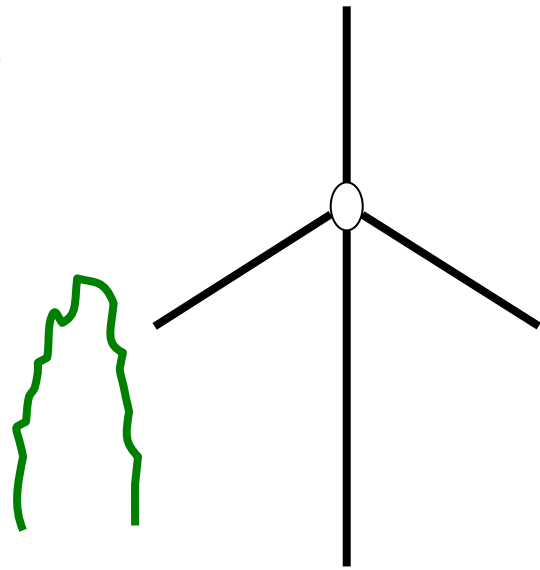
How may bats change their behaviour and movements in the presence of wind turbines?

- no change to behaviour
- attracted by insects feeding
- repelled due to disruption of forage route/flight path
- Any species specific changes predicted?

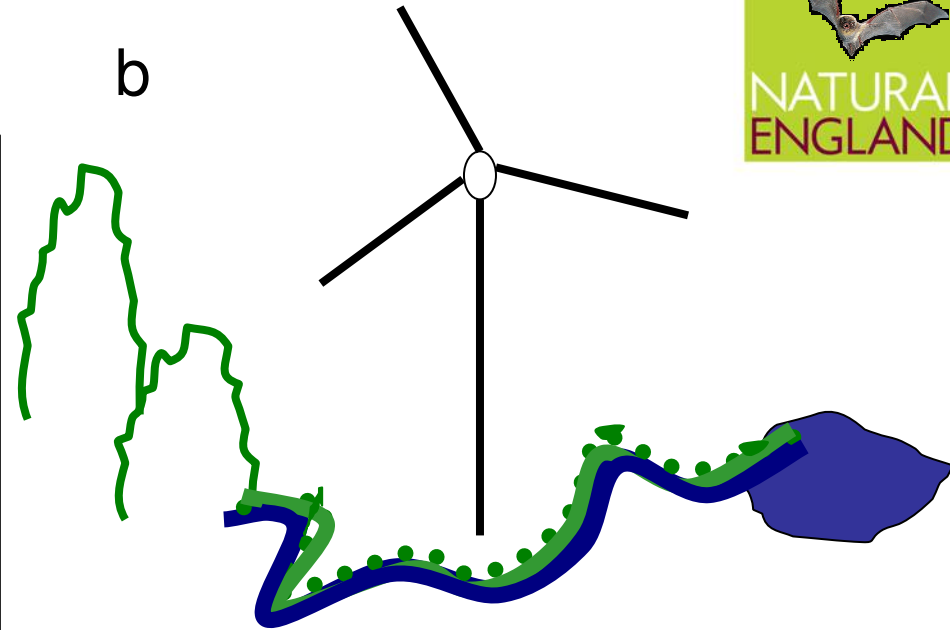
How to minimise risk to bats? Sites to avoid



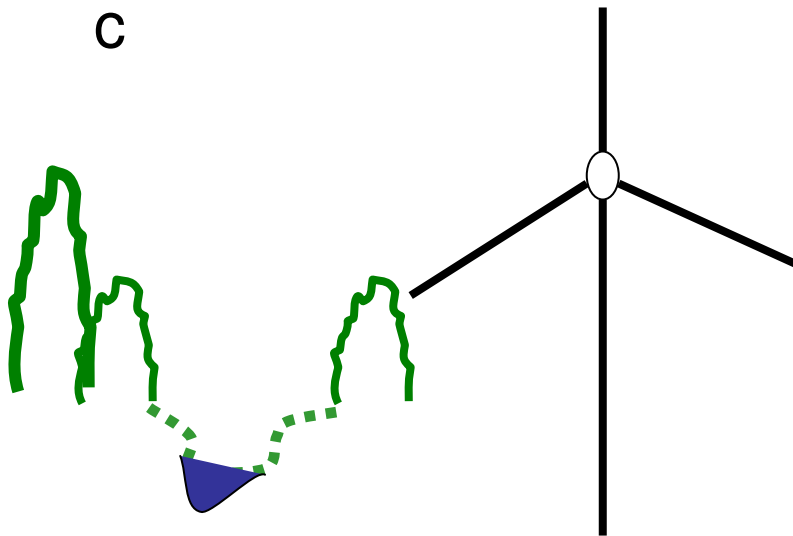
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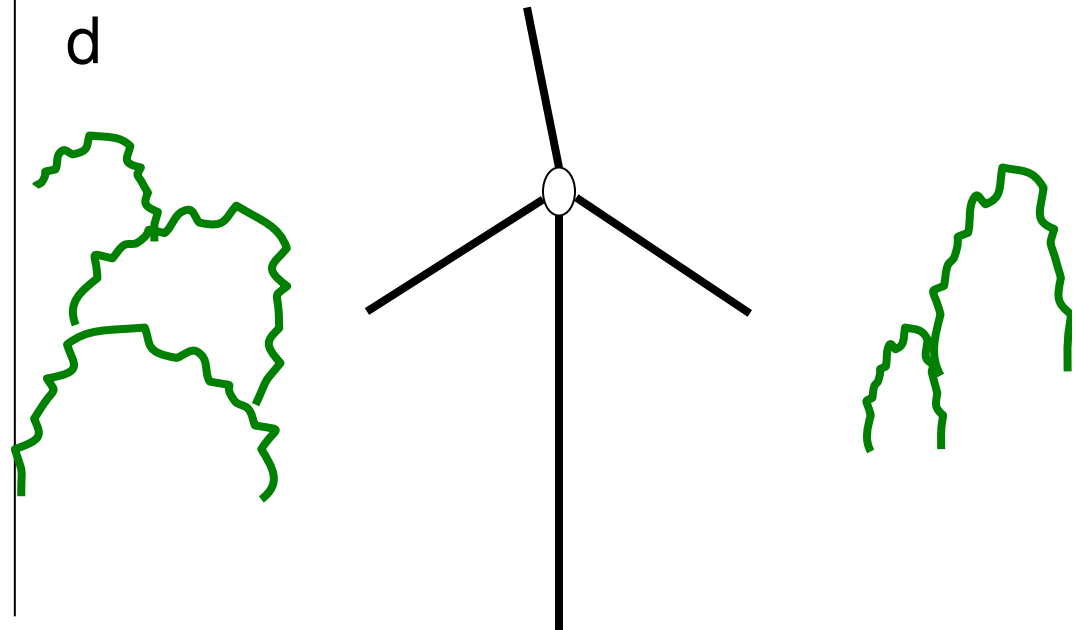
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How to minimise risk to bats?

Survey protocols:



Context

- Location
- Extent of windfarm
- What species
- Current use of landscape
 - value for bats
- Wider landscape
 - change in use?

Timing

- Bat use across year
 - forming nursery
 - dispersal
 - mating
 - movement to and from hibernation
- Invertebrate prey abundance across year

Methods

- Desk study
- Appropriate methods
- Bat & invertebrate fieldwork to provide data on
 - flight height
 - distance from linear features
 - distance from roost

Recommendations for wind farm companies, bat ecologists, planners and SNCO staff

Research Needs



- How high do bats fly, and when?
- How high do insect prey (e.g. moths) fly?
- Do bats migrate in UK?
- How far do bats travel in UK?
- Why do some bats avoid turbines?
- Why are some bats attracted to turbines?
- How many bats are killed by wind turbines?

Conclusions



- Natural England
 - Climate change and renewable energy on agenda
 - Need to assess risk of impacts on bats
- Bats and the landscape
 - Most bats prefer connected woodland/riparian habitats
 - Most activity occurs close to linear features
 - Display fidelity to traditional areas but exploit new opportunities
 - Vary foraging areas depending on insect availability
 - Behaviour varies depending on *life stage*
- Priorities
 - site selection and surveying crucial in minimising risk
 - Research needs e.g. bat flight height and landscape use