



Bats & Onshore Wind Turbines

Tony Mitchell-Jones

*'The challenge is to meet wind energy targets in ways
that minimise impact on nature and biodiversity'*
EU Draft Guidance on Wind Energy

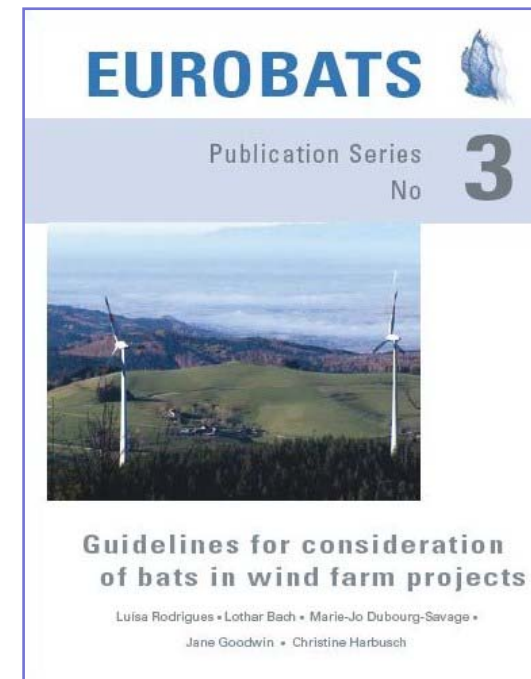
History

- North America:
 - large numbers of bats found dead beneath wind turbines
 - Tree-roosting species
 - Long-distance migrants
 - Peak of mortality at migration time (autumn)
 - Highest casualties around mountain ridges

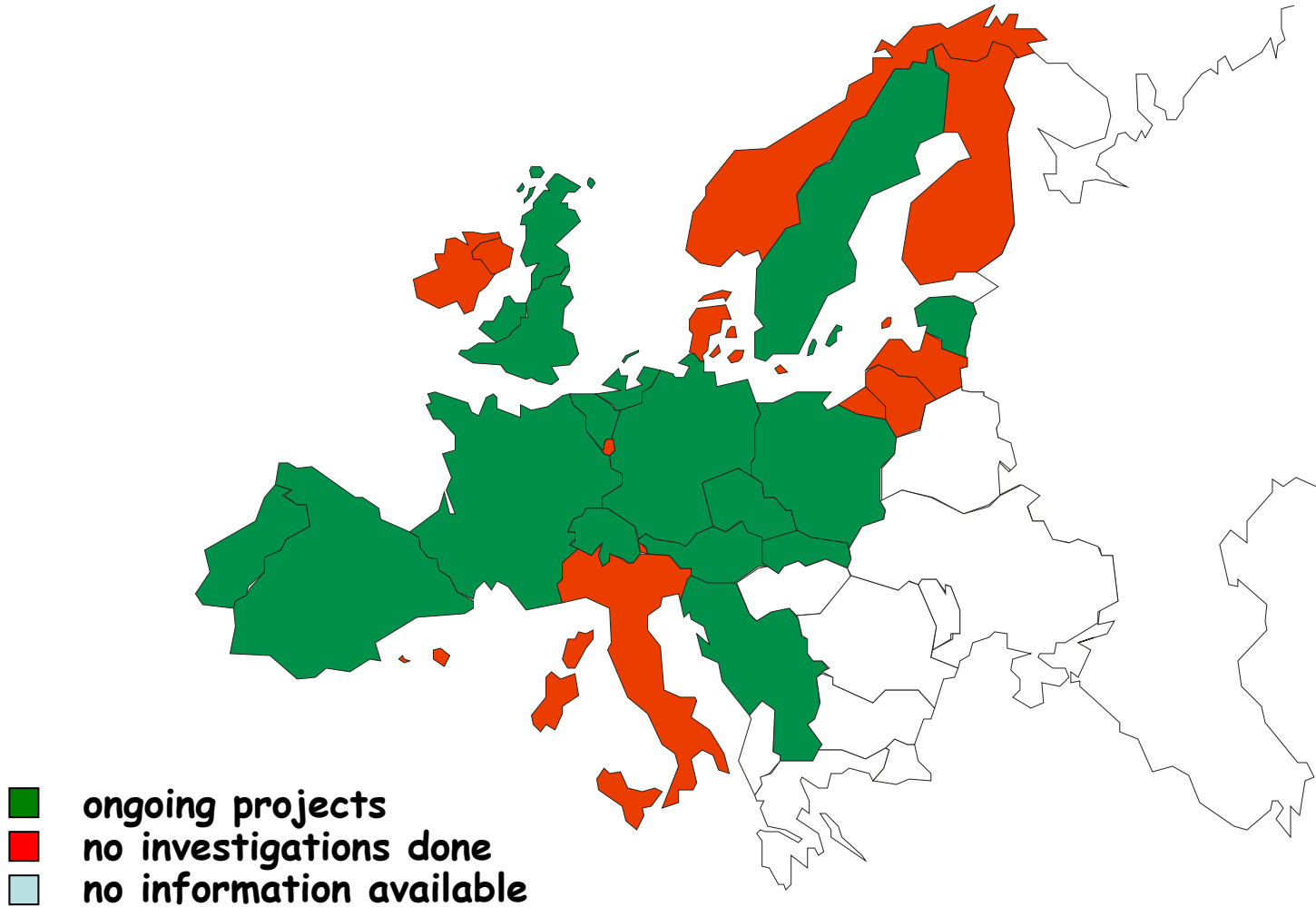


Europe

- First studies in late 1990s (Germany, France, Spain)
 - Small numbers found dead below turbines
 - Few structured studies
- Current studies
 - Improving methodologies (detection/removal)
 - Wide variety of situations (shore, forest etc.)
- Eurobats recommendations 2008



Bat fatality studies in Europe



Casualties in Europe

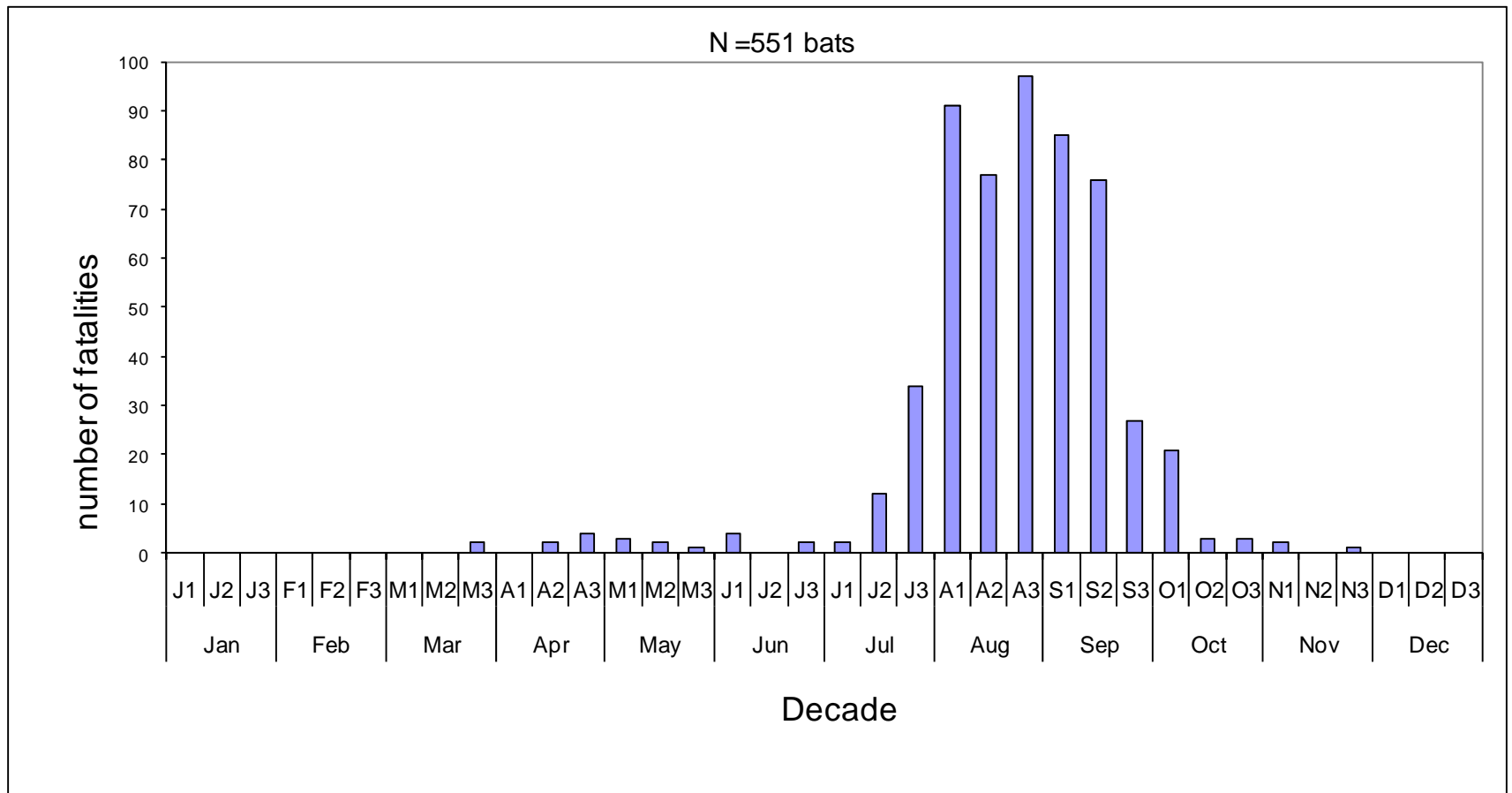
as at 30/4/2009



Species	Number
<i>Nyctalus noctula</i> , Noctule*	366
<i>Pipistrellus pipistrellus</i> , Common pipistrelle	362
<i>Pipistrellus nathusii</i> , Nathusius' pipistrelle*	334
Unidentified	83
'Pipistrelle'	81
16 other species	276
TOTAL	1502

* Long-distance migrant

Seasonality of occurrence



Current state of knowledge

- Bats are killed by onshore wind turbines in Europe
- Scale of casualties lower than N. America, but very variable: 2-30 bats/turbine/yr
- Mainly migratory species, but some residents
- Peak in autumn (migration), but some in summer
- Turbines near forests may produce more casualties
- Risk factors unclear

Uncertainty

- Lack of evidence-based advice
 - Uncertainty about risk factors
 - Uncertainty about survey requirements
 - Relationship between bat activity & casualty rate?
- Variation in application of 'precautionary principle'
 - No way to assess risk
- Planning issues and objections
 - Impact on capacity installation target

Research priorities



1. Are wind turbines a hazard to British bat populations?
2. If so, what are the risk factors?
3. How can we minimise the risk to bats?



Research project – Phase 1 (2008-9)

- Gather existing information
 - Ecological survey reports
 - Casualty reports
- Develop standard survey protocols
 - Casualty surveys
 - Acoustic monitoring
 - Surveyor training
- Identify study sites
 - Variety of situations across GB
- Bristol University & Bat Conservation Trust



Research project – Phase 2 (2009-) (subject to agreement)

- Casualty surveys
 - Detection efficiency
 - Carcass removal
 - Mainly autumn focus
- Acoustic monitoring
 - Recording ultrasonic bat-detectors (Anabat)
 - Nacelle height
- Contractor to be appointed



Outputs

- Estimates of bat fatalities per turbine per year
 - Species
 - Seasonality
- Relationship between acoustic monitoring and fatalities
 - Predictive value
- Risk factors
 - Latitude, altitude
 - Landscape elements
 - Turbine type

Outcomes

- Improved understanding of threat to bat populations
 - Risk \leftrightarrow value
 - Improved guidance for industry and planners
 - Understanding of risk factors
- Improved advice on survey requirements
 - Surveys will inform site selection & planning
 - Survey requirement proportionate to risk
- Reduced uncertainty for regulators and industry