Use of remote video surveillance to investigate deer behaviour in relation to wildlife deterrents, roads and vehicles

Dr Jochen Langbein
B4506 Ashridge

Eurocontor Ecopillars (Oct. 2005)

Traffic flow >5000 Vehicles per day

Dumbach Animal activated Signs (May 2006)

Wegu-Gft Acoustic Reflectors (Sep. 2005)
First Animal activated deer warning system in UK
(Hertfordshire Highways)
First Animal activated deer warning system in UK
(Hertfordshire Highways)

Langbein Wildlife Associates
A39 Quantock Hills:
WEGU-Gft Acoustic Reflector trial (Oct. 2005 ...)

Langbein Wildlife Associates
Confounding factors:

Variation in Deer Collisions between years may arise through changes including in e.g.:

- Deer abundance
- Cull taken
- Distribution of cull activity
- Other local disturbance / events
- Agricultural cropping
- Proportion reported
- Publicity and Signage
- Traffic volume / speed
- Verge vegetation management

- .....as well as potential effects of Deterrents
Ashridge Fallow Counts and Recorded Losses 2000-2007

- Spring Count + all known losses past 12 month
- Spring Deer Count
- Shooting Cull taken
- Road Casualties

Legend:
- FMD

Years:
- 2000/1
- 2001/2
- 2002/3
- 2003/4
- 2004/5
- 2005/6
- 2006/7

Counts and losses from 2000 to 2007 are depicted in the graph.
• Digital covert video;
• 2 - 3 cameras (for control + trial sections)
• 93 days filmed (61 Ashridge / 32 Quantocks)
• c. 1800 hrs useable footage
• >400 groups of deer filmed at road
• plus c. 100 fox, badger crossings
Video studies

To view example video clips go to:
www.deercollisions.co.uk/pages/avoid.html
Video studies - :

- Much greater frequency of road crossings than expected
- Great variability in response to traffic & deterrents
Video studies -

- High level of crossings recorded
- Wide variability in response to traffic & deterrents
- Red deer cross more ‘carefully’ vs fallow ?)
i. Diurnal distribution of deer video clips at roadside:
B4506 Ashridge (all obs. Oct-May)

- Controls Ashridge  n=136
- Wegu Acoustic - Ashridge  n=68
- Ecopillar Ashridge  n=59
ii. Diurnal distribution of deer video clips recorded at roadside: A39 Quantocks

![Graph showing diurnal distribution of deer video clips recorded at roadside: A39 Quantocks. The graph compares the distribution of deer sightings across different time periods for two groups: Controls Quantocks (n=24) and Wegu-Acoustic Quantocks (n=93). The y-axis represents the percentage of sightings, while the x-axis shows time periods from 12:00-15:00 to 0:00-3:00. The graph indicates a higher percentage of sightings during the night (21:00-0:00) for both groups, with Wegu-Acoustic Quantocks showing a slightly higher percentage.
### Delay after most recent vehicle below animal(s) entered roadway

#### Ashridge : Fallow Deer

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#### Wegu-Gft

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**Langbein Wildlife Associates**
### A39-Quantocks: Red Deer

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### Wegu-Gft

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### Foxes (both areas combined)

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Change in numbers of DVC at Ashridge

Deer Collisions Ashridge NT

B4506 Other Ashridge Roads

Deterrent installation
Number and distribution of Deer casualties
Before / After mitigation

**B4506 Deer Collisions**

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<th>Treatment</th>
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<th>Oct’04-Mar’05</th>
<th>Apr’05-Sep’05</th>
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Ecopillar signal response trials for fallow and red deer
• Response trials: fast habituation to Ecopillar signals by fallow and red deer.

• Response trials with Roe / Muntjac needed;

• & re Wegu-acoustic and other new devices
No true ‘infrasound’ detected (5-20Hz)

Attempts in lab. to trigger pillar to pillar (transmitter to receiver) unsuccessful

• Literature indicates deer hearing most sensitive from 1kHz – 8kHz
  
  (reviews e.g. D’Angelo et al. 2004)
From Acoustic measurements, Highfield & Petty, 2007 (Somerset Scientific Services) concluded:

• “The Ecopillar device produces noise at low levels likely to be dominated by traffic noise or background noise in woodland during windy conditions when separation distance from an alarm is more than 10m”.

• & “probable that deer need to be within 3m of pillar for alarm to be distinctive above interfering noise from an approaching car; ….even if it were able to trigger at 60m”.

Most other studies into effectiveness of ultrasound scaring devices on deer for e.g. crop protection also negative (e.g. Belant et al 1998).

Redesigned *Eurocontor* replacement device now provided for testing; Four to be installed at local blackspot on B4506.
Integration of range of measures needed
- matched to local situation:

- Public awareness / posters / media
- Driver awareness e.g. Interactive signs
- Speed limits, traffic calming critical
- Coordinated deer control / planning of cull
- Verge management
- Dog walker / visitor control
- Undisturbed sanctuary areas
- Wildlife Deterrents (??)
UK Highways Economic Note 1:  
(at 2005 cost)

Recommended average ‘Values of Prevention’ of road accidents by severity of highest casualty:

- Fatal: £ 1,645,110
- Serious: £ 188,960
- Slight: £ 19,250
- (Damage only £ 1,710)

Average per Accident: £ 64,460
Cost / Benefit

In last five years 80 human injury DVCs recorded in Hertfordshire + Buckinghamshire + Bedfordshire

@ 16 injury accidents per year the annual “value of prevention” = £1,040,000 per year

Hence - £1,000,000 spending over five years on DVC prevention across the Three Counties could produce substantial net savings IF results in fall of DVCs by just by just 20% or more.

….. a realistic target, even at lesser spend ?
Deer Road Kills recorded in 5yrs 2001-2005 in these nine Forest alone exceeds >4500 and include c. 105 human injury accidents.
Approaches being tried elsewhere

• Dinmore Hill – deer control & Ecopillar trials

• Forest of Dean - temporary signage

• Cannock - cover/uncover reflectors
• Epping - dead hedge / reflectors in gaps

• Ashdown - awareness posters, plus enhanced road signage

• Thetford – rumble strips
Thank you

- Hertfordshire Highways & The National Trust
- Chilterns AONB
- Buckinghamshire C C
- Bedfordshire C C
- Somerset C C

& The Deer Initiative Partnership