




Balancing access and nature conservation

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Overview

- Context and definitions
- What are the impacts of recreation?
- Who visits countryside sites for recreation?
- Solutions

Evidence gaps



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A difficult balancing act

- Multiple pressures/uses on countryside sites
- UK population increasing
- More people, less space for recreation
- Access important, with benefits in terms of health, well-being, economic, engagement
- Increasing awareness of importance of connecting with nature and being outside – Covid has brought to fore



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'Recreational Disturbance'?

Disturbance means different things to different people....

The impacts to habitats and species resulting from the presence of vehicles and people (& their pets) in the countryside.

More than birds flying away!

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Impacts of Recreation

- Damage**
 - Vegetation wear
 - Soil compaction, erosion
 - Direct damage (e.g. vandalism)
- Contamination**
 - Dog fouling
 - Non-natives
- Increased fire risk**
 - Fire results in direct mortality
 - Long-term habitat change
- Disturbance**
 - Avoidance of suitable habitat
 - Physiological and energetic costs
 - Direct mortality
- Other/management**
 - Difficulty in managing sites – grazing, public opposition etc.
 - Costs of managing access defect from site management
 - Demand for facilities



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Impacts of Recreation

- Damage**
 - Vegetation wear
 - Soil compaction, erosion
 - Direct damage (e.g. vandalism)
- Contamination**
 - Dog fouling
 - Recreational waste
- Increased fire risk**
 - Fire results in dead standing trees and habitat change
- Disturbance**
 - Reduction of wildlife habitat
 - Physiological and behavioural stress to other mammals
- Other/management**
 - Difficulty in managing costs of grazing, timber production etc.
 - Costs of managing roads and other infrastructure
 - Provision for public enjoyment

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Non native species

- Walking humans can disperse seeds to very long distances, up to at least 10km.
- The abundance and richness of non-natives higher in areas with tourism/recreation compared to control sites.
- Some suggestion horse riding a particularly strong vector.
- Evidence for fungal pathogens too.

Wichmann, M. C., Alexander, M. J., Soehn, M. B., Galworthy, S., Dunn, L., Gould, R., Fairfax, C., Higgemann, M., Hall, R. S., & Bullock, J. M. (2020). Human-mediated dispersal of seeds over long distances. *PLoS ONE*, 15(2), e0218161. doi:10.1371/journal.pone.0218161

Halliday, N. R., & Dunn, A. M. (2015). The Role of Tourism and Recreation in the Spread of Non-Native Species: A Systematic Review and Meta-Analysis. *PLoS ONE*, 10(2), e0119833.

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Impacts of Recreation

| | |
|---------------------|---|
| Damage | <ul style="list-style-type: none"> • Soil erosion • Soil compaction • Soil nutrient depletion • Root damage (e.g. vertebrate) |
| Contamination | <ul style="list-style-type: none"> • Dog faeces • Urine • Antisocial |
| Increased fire risk | <ul style="list-style-type: none"> • Fire results in direct mortality • Long-term habitat change |
| Disturbance | <ul style="list-style-type: none"> • Avoidance of suitable habitat • Physiological and energetic costs • Direct mortality |
| Other/management | <ul style="list-style-type: none"> • Difficulty of managing sites - growing public discontent • Costs of managing sites, direct from site visitation • Increased fire risk |

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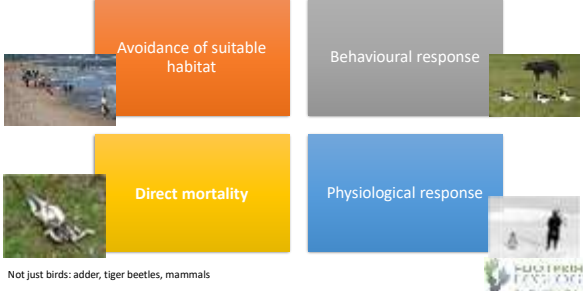
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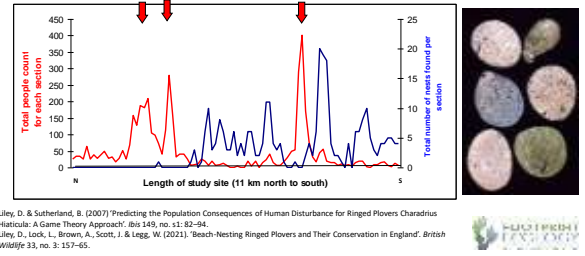
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Disturbance



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Avoidance & direct mortality



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Physiological impacts

- Increase in stress hormones (fecal corticosterone)
- Heart Rate increases (2-3 hrs after person passes nest)
- Elevated temperatures
- Increased nest failure (e.g. Kittiwakes) as a result of increased energy - 10%? daily energy expenditure as a result of disturbance



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Impacts of Recreation

| | |
|---------------------|---|
| Damage | <ul style="list-style-type: none"> • Soil compaction • High ground water tables • High ground water salinity |
| Contamination | <ul style="list-style-type: none"> • Fertilisers • Pesticides • Antiparasitics |
| Increased fire risk | <ul style="list-style-type: none"> • Dry results in dead vegetation • Long term habitat change |
| Disturbance | <ul style="list-style-type: none"> • Alteration of trophic systems • Physiological and behavioural stress • Nest abandonment |
| Other/management | <ul style="list-style-type: none"> • Difficulty in managing sites - grazing, public opposition etc. • Costs of managing access defect from site management • Demand for facilities |

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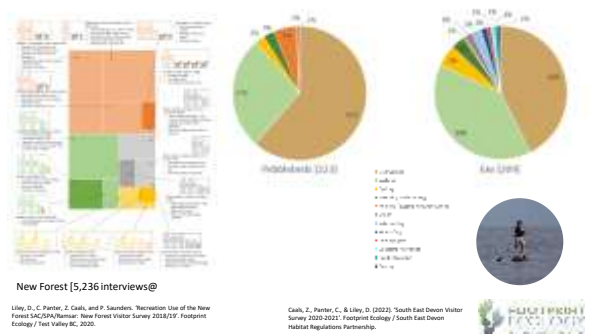
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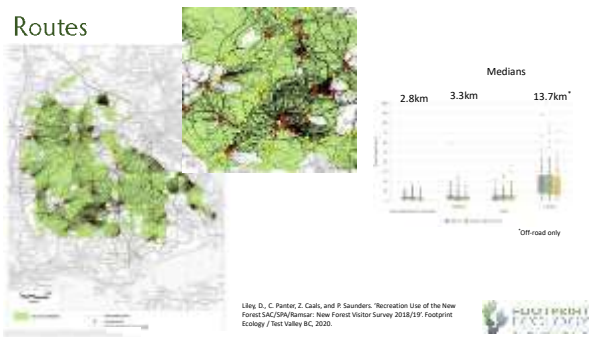
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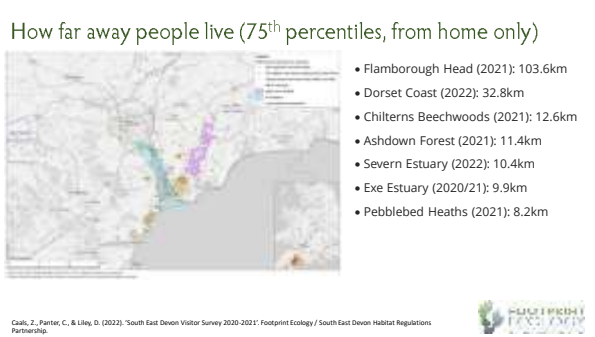
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Closing thoughts

- Access to countryside fundamental
- Current pressures high at many sites
- There are opportunities to create new sites for recreation and zone existing much better
- Inspiring green spaces with room for nature to recover

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