

Berkshire
Buckinghamshire
Oxfordshire



**Part Land On The North Side Of Gavray Drive,
Bicester, Oxfordshire**

(Appeal by Gallagher Estates Ltd Under Section 78 of the Town & Country
Planning Act 1990)

APPENDICES
to the Proof of Evidence by Haidrun Breith
on behalf of The Berks Bucks & Oxon Wildlife Trust (BBOWT)

May 2018

PINS Appeal Reference: APP/C3105/W/17/3189611
Cherwell District Council Application reference (15/00837/OUT)

Appendices:

Appendix 1:

Is the management of Local Wildlife Sites affected by the urban fringe? (Routh, C., 2016). Natural England Research Reports, Number NERR063.

Also available online:

<http://publications.naturalengland.org.uk/publication/6134796821463040>

Appendix 2:

Human Impacts on Nature Reserves – The Influence of Nearby Settlements. (Rylatt, F. *et al*, 2017) In: *InPractice – Bulletin for the Chartered Institute of Ecology and Environmental Management*, Issue 97, September 2017.

Appendix 3:

Excerpts from: *Dogs, access and nature conservation* (Taylor, K. *et al*, 2005) English Nature Research Reports, Number ENRR649.

Also available online: <http://publications.naturalengland.org.uk/publication/65013>.

Appendix 4:

Excerpts from: *Literature review on the effects of pet cats on nearby protected wildlife sites.* (Floyd, L. & Underhill-Day, J. C., 2013):

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[ecology.co.uk/reports/Floyd,%20L%20and%20Underhill-Day,%20J%20C%20-202013%20-%20A%20literature%20review%20on%20the%20effects%20of%20pet%20cats%20on%20](http://www.footprint-ecology.co.uk/reports/Floyd,%20L%20and%20Underhill-Day,%20J%20C%20-202013%20-%20A%20literature%20review%20on%20the%20effects%20of%20pet%20cats%20on%20)
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Appendix 5:

Excerpt from: British Standard (2013): *BS 42020:2013: Biodiversity – Code of practice for planning and development.* British Standards Limited 2013.

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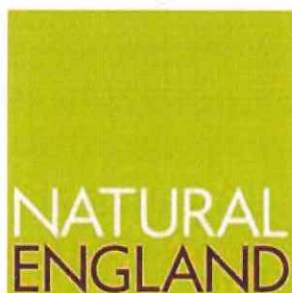
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Is the management of Local Wildlife Sites affected by the urban fringe?

Natural England Research Report NERR063

Is the management of Local Wildlife Sites affected by the urban fringe?

Charles Routh



Published 08 February 2016

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1 Summary

- 1.1 Anecdotal evidence suggests that local wildlife sites are adversely affected by proximity to the urban fringe through a variety of direct and indirect vectors. One of the indirect vectors is thought to be changes in the propensity to manage such sites positively for wildlife, in particular those sites requiring grazing, and especially those in private ownership. However, no evidence exists to demonstrate this.
- 1.2 The purpose of this study was to ascertain the strength of the relationship between positive conservation management and proximity to the urban fringe, and whether this relationship was stronger for those sites in need of grazing.
- 1.3 GIS analysis of the relationship between positive management local wildlife sites and proximity to urban areas was undertaken. Local wildlife sites close to urban areas were found to be notably less likely to be positively managed. The clearest demonstration of this was for local wildlife sites in private ownership where grazing management is likely to be the most appropriate form of management. Of these sites, the study found 50% of those in close proximity to urban areas to be in positive management, compared to 68% of those not near urban areas (a difference of 18%). The effect on other sites, where grazing management was not likely to be appropriate, was less pronounced. For these sites in private ownership, those in close proximity to urban areas are 35% likely to be in positive management compared to 46% for those not near urban areas (a difference of 11%).

2 Method

- 2.1 Local site data covering 13 geographical areas was analysed against the following criteria:
- 1) Whether the site was in positive conservation management. Specifically was the site recorded as being under positive management under the NI197¹ reporting criteria?
 - 2) Whether the site was on the urban fringe. Specifically, did the site intersect with a 100m buffer around the urban extent GIS² layer? A 100m buffer was chosen as it was felt that this was the distance over which the causal mechanisms suggested below would operate. A sensitivity analysis has not been undertaken.
 - 3) Whether the site was a “grassland” site. Specifically did the site include habitats likely to need grazing to be in positive management (hereafter referred to as “grassland sites”) ? Those sites which contained priority habitats judged to require grazing were classed as grassland sites. Appendix 1 lists which category habitats were placed.
 - 4) Whether the site was thought to be in private ownership. As part of the project development, it was suggested by data suppliers that land in public (including NGO) ownership was more likely to be in positive management, and more likely to occur on the urban fringe. We thus identified the most obvious NGO and public sector owned sites using the Rural Land Registry data, and removed these from the assessment.

¹ National Indicator 197: Improved Local Biodiversity – proportion of Local Sites where positive conservation management has been or is being implemented. See [here](#) for the reporting methodology.

² Using the 2001 Communities and Local Government for Urban Areas, Office for National Statistics (ONS) population data.

3 Results

- 3.1 Initial analysis showed a stronger effect for sites under private ownership (which formed the majority of the sample). For simplicity, only results from this subset of data are presented below.

Table 1 Changes in area of permanent grassland in England since 2005 (RPA)

	Wider countryside		Urban fringe	
	Number in +ve management	% in +ve management	Number in +ve management	% in +ve management
Grassland	2072	68%	355	50%
Non Grassland	3655	46%	703	35%

Background data can be viewed in the associated spreadsheet.

- 3.2 Thus for both habitat categories, positive management for wildlife was notably less likely when the site was within 100m of an urban area, but stronger for grassland sites.
- 3.3 Whilst this study does not explicitly show a causal relationship, but rather an association, there are a number of plausible causal mechanisms including:
- Indirect impacts of people: gate vandalism, stock worrying, dog fouling etc., meaning grazing is less attractive.
 - Average holding size being smaller, meaning that cattle or sheep grazing is less viable as an enterprise, so grazing is less attractive.
 - Increased viability of horse grazing (which is not likely to be classed as positive management).
 - Economic incentive to allow the biodiversity value of the site to decline as a means of reducing development constraints on the site.
- 3.4 These causal mechanisms would act more strongly on grassland sites, and this fits with the results.
- 3.5 It is also worth noting that lack of management is perceived to be the biggest threat to Local Wildlife Sites according to a survey of Local Wildlife Site partnership areas³.

³ Rachel Hackett Secret Spaces: the status of Local Wildlife Sites 2014
<http://www.wildlifetrusts.org/localwildlifesites>



Plate 1 Local Wildlife Site, showing (in yellow) what appears to be a garden extension into an unmanaged grassland site on the edge of a small town

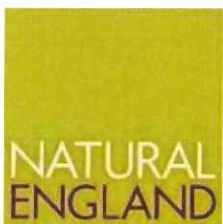
Other urban effects on local wildlife sites

- 3.6 This study only looks at impacts that are mediated by land management on local wildlife sites. However, it should be recognised that there are also a number of other ways that local wildlife site biodiversity may be impacted by new development in close proximity. These include:
- 1) Direct impacts due to greater public use of the site, permitted or otherwise, (disturbance, trampling, eutrophication, fires etc.).
 - 2) Other direct impacts not involving physical access (lighting, noise, cat predation etc.).
 - 3) Severance from the wider countryside, making it harder for priority species on the site to act as part of a larger meta-population, so making the site and its environs less resilient to climate change or localised extinctions.
- 3.7 Prejudicing any future restoration of stronger ecological linkages between the site concerned and others.

Appendix 1

Table A Habitats classed as “grassland” (in red below)

Habitat	Abbreviation
Blanket bog	BLBOG
Calaminarian grassland	CALAM
Coastal & floodplain grazing marsh	CFPGM
Coastal sand dunes	CSDUN
Coastal vegetated shingle	CVSHI
Deciduous woodland	DWOOD
Limestone pavements	LPAVE
Lowland calcareous grassland	LCGRA
Lowland dry acid grassland	LDAGR
Lowland fens	LFENS
Lowland heathland	LHEAT
Lowland meadows	LMEAD
Lowland raised bog	LRBOG
Maritime cliff & slope	MCSLP
Mountain heath & willow scrub	MHWSC
Mudflats	MUDFL
Purple moor grass & rush pastures	PMGRP
Reedbeds	RBEDS
Saline lagoons	SLAGO
Coastal saltmarsh	SALTM
Traditional orchards	TORCH
Upland calcareous grassland	UCGRA
Upland hay meadows	UHMEA
Upland heathland	UHEAT
Upland flushes, fens & swamps	UFFSW



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Appendix 2:

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Human Impacts on Nature Reserves – The Influence of Nearby Settlements

Keywords: anthropogenic, disturbance, housing, nature reserves

Fin Rylatt, Lauren Garside and Sara Robin
Yorkshire Wildlife Trust

Recreational disturbance and damages can result in significant negative impacts on wildlife and habitats, and the addition of extra housing to an area can increase such pressures considerably. There has been little investigation of the impacts of increased recreational pressures on habitats outside of European Designated Sites and there is little evidence of impacts on non-statutory designated sites (such as Local Wildlife Sites). This article investigates the relationship between housing proximity and frequency of damage and disturbance on Yorkshire Wildlife Trust nature reserves, and how such impacts should be considered when determining the likely impacts of additional housing to an area.

Introduction

Yorkshire Wildlife Trust (YWT) manages over 100 nature reserves spanning a variety of landscapes and habitats in both rural and urban areas. Whilst our reserves are managed for people to re-connect with nature just as much as they are for wildlife, there is a delicate balance to be struck to satisfy both these differing needs and ensure that increased engagement with the public doesn't result in biodiversity losses.

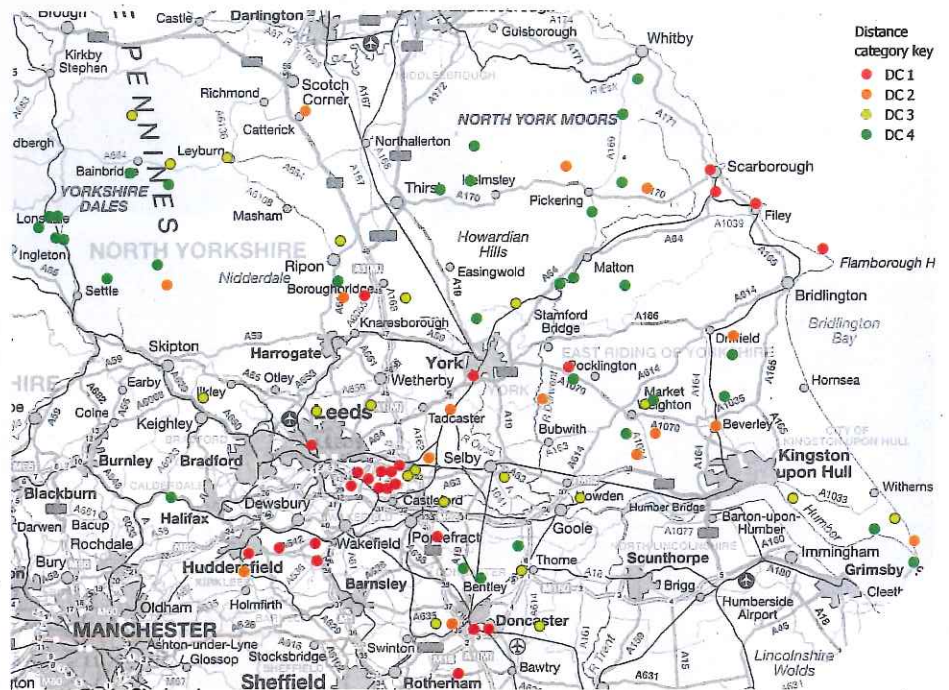


Figure 1. Map of Yorkshire Wildlife Trust nature reserves colour coded according to proximity to settlements. Distance categories – DC1: within 100 m, DC2: 101-500 m, DC3: 501-1000 m, DC4: 1001+ m.

Due to a lack of current research, Yorkshire Wildlife Trust undertook an analysis into the impacts of housing on nature reserves with the aim of better understanding why damage and disturbance occurs and how it may be prevented. This article presents an analysis of the different types of damage and disturbance and the impact that the proximity of housing may have on such incidents.

Methodology

In order to assess the problem, incidents of damages and disturbances were logged during visits to 94 nature reserves by YWT reserve officers during 2016. As such visits are ad-hoc in their nature, the data were collected opportunistically

rather than on set inspections specific for the study. Reserve officers were provided with definitions of each damage/disturbance type to ensure consistency. The data were collated on a central Excel database and analysed.

Five types of damage and disturbance were defined and recorded by reserve officers:

1. Litter and fly-tipping
2. Damage and disturbance by dogs and other domestic animals
3. Anti-social behaviour including vandalism, graffiti, barbecues
4. Theft and destruction of wildlife and property
5. Damage by vehicles.

Nature reserves were allocated to distance categories depending on their proximity to settlements (Figure 1). A settlement is defined in this study as any place made up of clusters of twenty or more dwellings, retail units and/or business/industry units.

The following categories were used to assess the relationship between disturbance and proximity of settlements to WWT nature reserves:

- **DC1:** 0-100 metres from nearest settlement (total reserves: 26)
- **DC2:** 101-500 metres from nearest settlement (total reserves: 16)
- **DC3:** 501-1,000 metres from nearest settlement (total reserves: 20)
- **DC4:** 1001+ metres from nearest settlement (total reserves: 32)

Frequency categories were used to quantify the occurrence of incidents. Each frequency category was assigned a numerical weighting so that a frequency **score** could be calculated for each category of damage and disturbance. This accounted for the differences in frequency of each individual report (with reports ranging from one-off incidents to frequent incidents) and allows for a simple comparison of frequency across all distance categories (Figure 2):

- **One-off** – incidents occurring only once/rare – assigned a weighting of 10
- **Occasional** – on average occurring once a month or less often – a weighting of 20

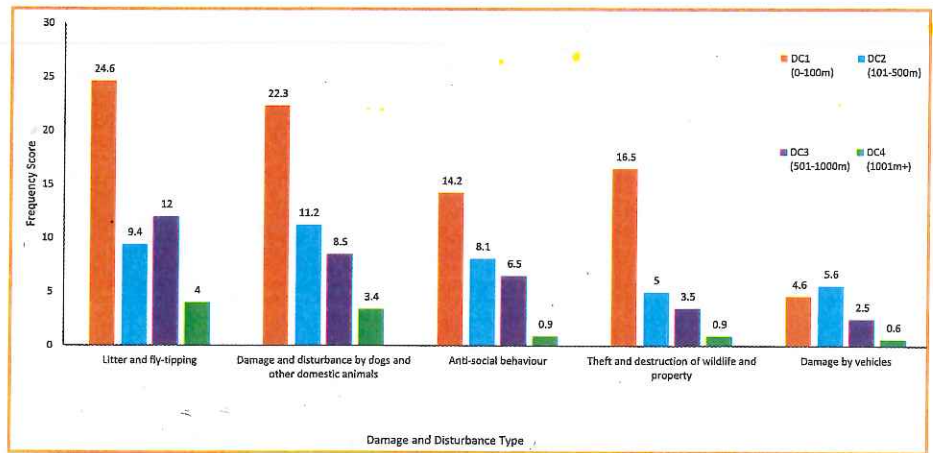


Figure 2. Frequency score of each damage and disturbance type across 94 nature reserves sub-divided by distance category.

- **Frequent** – on average occurring more than once a month – a weighting of 50

Limitations

The Yorkshire Wildlife Trust is unable to maintain a constant presence on nature reserves due to limited staff resources. The data collected are therefore likely to represent an underestimate of the number of damage and disturbance incidents, especially those which may be undetectable after the incident has occurred, such as disturbance of wildlife by people and dogs. The results of this analysis must therefore be used cautiously, especially in relation to mitigation for housing schemes. In these cases, detailed visitor surveys of nature reserves will be

required to determine the likely impacts of any increased housing on specific sites and the scale of mitigation required.

Results

Damages and disturbances were reported at 67 (71%) of the 94 nature reserves that were included in this analysis. This was limited to one type on many reserves but four or more types of disturbance were recorded from some reserves (12%). Table 1 details the 139 incidents by damage and disturbance type, distance and frequency category.

There was a significant negative relationship between the proximity of a nature reserve to a settlement and the frequency of damage and disturbance incidents (linear regression: $n = 94$, df

Table 1. Total number of damage and disturbance reports by distance category (sample size: 94 nature reserves; * = one-off, ** = occasional, *** = frequent).

Damage and disturbance type	Number of reports for each distance category												Totals
	DC1 (26 reserves)			DC2 (16 reserves)			DC3 (20 reserves)			DC4 (32 reserves)			
	*	**	***	*	**	***	*	**	***	*	**	***	
Litter and fly-tipping	3	8	9	0	5	1	1	4	3	4	2	1	41
Damage and disturbance by dogs and other domestic animals	1	6	9	0	4	2	1	3	2	1	5	0	34
Anti-social behaviour	2	5	5	1	6	0	0	4	1	3	0	0	27
Theft and destruction of wildlife and property	3	5	6	2	3	0	1	3	0	1	1	0	25
Damage by vehicles	1	3	1	1	4	0	0	0	1	0	1	0	12
Totals	67			29			24			19			139

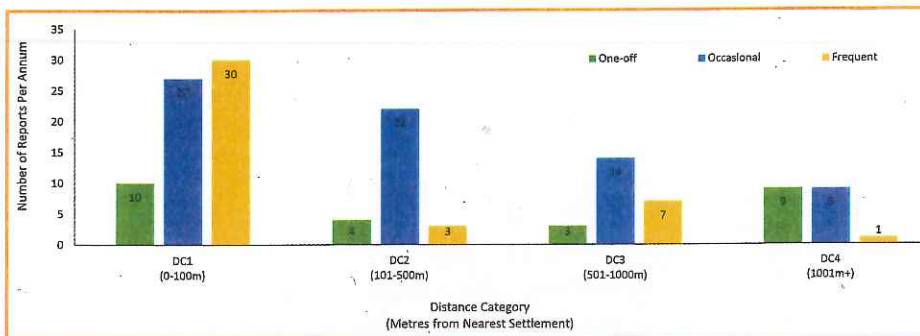


Figure 3. Total number of reports of all types of damage and disturbance for nature reserves in each distance category (139 incidents across 94 nature reserves).

1,92, $P < 0.0001$). The greatest frequency of incidents occurred at YWT reserves within 100 m of a settlement, which was true for all disturbance types apart from damage by vehicles (Figure 2).

Damages and disturbances reported as *frequent* (>1 per month) were highest at DC1 reserves (within 100 m of a settlement), accounting for 73% of all incidents described as *frequently* occurring (Figure 3). Litter and fly-tipping was the most recurrent type of damage and disturbance at YWT nature reserves (30%), with damage by dogs and other domestic animals occurring at similar levels (24%). Anti-social behaviour (19%) and theft and destruction of wildlife and property (18%) were less common and damage by vehicles (9%) was the least recorded damage type. (Table 1, Figure 4)

1. Litter and fly-tipping

Reports of litter and fly-tipping show that it is the most persistent damage type faced by YWT. Of the 41 reports of litter and fly-tipping, over 80% were described as either *occasional* or *frequent*. Most incidents of littering and fly tipping occurred on nature

reserves in DC1, accounting for 49% of the total number of reports, and the highest frequency score (Table 1, Figure 2). There is a clear decline in frequency score (62%) from DC1 to DC2 reserves.

Managing litter and fly-tipping occupies a great deal of YWT's time and involves dealing with an array of waste including general litter, unwanted furniture, building rubble and tyres. The build-up of litter on nature reserves leads to wide-ranging negative consequences including habitat degradation, chemical pollution and injury/death of wildlife.

The data collected in this study suggests that littering is especially problematic at reserves surrounded by residential areas. Anecdotal evidence from reserve officers also suggest that it is especially problematic around schools. Reserves located further away from settlements still suffer from litter and fly-tipping but reports tend to be of one-off incidents involving larger items (such as furniture fly tipping, Figure 5) rather than general dropping of litter (Figure 2).

2. Damage and disturbance by dogs and other domestic animals

This type of damage mostly concerns dog fouling on nature reserves but also includes other illegal activity such as sheep worrying by dogs and fly grazing by horses. The impact of cat predation on wildlife has not been taken into account in this study, due to practical difficulties associated with data collection. Nevertheless, this is likely to occur on YWT nature reserves, as highlighted in studies by The Mammal Society (Wood *et al.* 2003). It will be more prevalent in nature reserves close to settlements and must be given consideration during the determination of planning applications.

Those nature reserves closest to settlements experienced the highest frequency of damage relating to domestic animals, as dog owners are more likely to use reserves close to their homes for dog exercising. Fifty-eight per cent of all reserves within 100 m of a settlement (DC1) reported frequent or occasional damage of this type, compared with just 16% of DC4 reserves (>1 km away from settlement) (Table 1). The lower frequency of damage by dogs on DC4 reserves could be due to fewer people within close proximity of the nature reserves.

Although YWT allows dogs on many of its reserves, dog fouling is illegal and the unpleasant task of clearing up is too often left to YWT staff. Dog waste in large amounts is known to alter the chemical composition of soil, which leads to changes in the plant species which occur there, and may have significant impacts on the quality of grassland habitats (Bonner and Agnew 1983, Taylor *et al.* 2005).

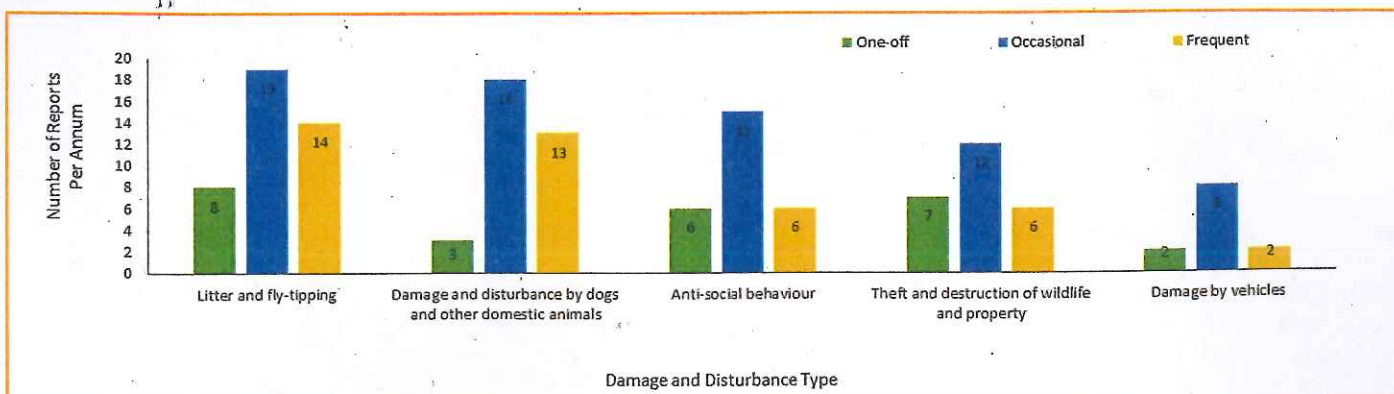


Figure 4. Total number of reports of each type of damage and disturbance (139 incidents across 94 nature reserves).



Figure 5. Fly tipping often consists of large pieces of furniture that are difficult or costly for people to dispose of, such as this armchair fly tipped on a SSSI meadow. Photo credit Jim Horsfall.

months when parties and barbeques become a regular occurrence at many reserves within 500 m of the nearest settlement (Figure 2). More secluded reserves are less prone to such activities.

4. Theft and destruction of wildlife and property

This type of damage can be very costly and proximity to settlements has a large bearing on how heavily a reserve is impacted. It includes the cutting down and burning of trees and plants, destruction and theft of gates and fences (Figure 7), damage to hides and spraying of herbicides on plants. Destruction of trees and habitats can have long-lasting impacts on nature reserves.

Reports of this type were greatest at DC1 reserves, accounting for 54% of all

reports of theft and destruction (Table 1). Frequent incidents were only reported from nature reserves within 100 m of the nearest settlement and became rarer the further from a settlement a reserve was located. Residential areas in the immediate proximity of a reserve are linked to the likelihood of forced access onto Trust land through the removal of fencing and gates.

5. Damage by vehicles

Damage by vehicles is the least frequent disturbance at YWT's nature reserves. Despite this, incidents can be amongst the most damaging with burnt-out cars (Figure 8) and vehicle use inflicting long-term and potentially irreversible damage to rare habitats such as salt marsh and MG4 grassland (Figure 9).

Dogs are often let off leads on nature reserves, contrary to YWT signposted instruction. Dogs therefore stray off paths, which are positioned to avoid sensitive wildlife areas, resulting in damage to habitats and disturbance of animals, which can have significant negative impacts on breeding and survival rates. Furthermore, serious incidents of dogs attacking sheep has led to the curtailment of sheep grazing on nature reserves, and the loss of biodiversity enhancement from conservation grazing schemes. This leads to serious issues for YWT where grazing is specified in legal management agreements.

3. Anti-social behaviour

Anti-social behaviour on reserves encompasses a wide range of activities including graffiti, camping and barbeques (Figure 6), which can be hugely damaging to habitats. Whilst graffiti may not have significant wildlife implications, it does reduce a reserve's attractiveness to visitors and their sense of safety. Removing graffiti is therefore an essential and recurring task at many reserves.

There is a clear link between the level of anti-social activity at nature reserves and the proximity of reserves to settlements (Figure 2). Forty-six per cent of DC1 reserves were subject to anti-social behaviour compared to just 25% of DC3 reserves and 9% of DC4 reserves (Table 1). This behaviour peaks during the summer



Figure 6. Campfire damage at woodland nature reserve. Photo credit Jim Horsfall.



Figure 7. Newly installed gates are frequently the target of thieves, often to allow illegal access for vehicles or livestock or to install the gate on private property. Photo credit Jim Horsfall.



Figure 8. Burnt-out car abandoned on a grassland SSSI nature reserve. Photo credit Jim Horsfall.



Figure 9. Tyre marks caused by off-road driving on a sensitive saltmarsh nature reserve. Photo credit Andrew Gibson.

Interestingly, damage by vehicles is the only type of damage and disturbance not correlated directly with distance category. Reports were greatest at reserves between 100 and 500 m from the nearest settlement (DC2: 42% of the total number of incidents, Table 1). Reserves over 500 m from the nearest settlement were subject to lower frequencies of damage by vehicles and reserves furthest from a settlement rarely reported this as a problem (DC4: 8% of total damage by vehicles reports).

The way forward

This analysis has highlighted that the proximity of a nature reserve to the nearest settlement can be a key predictor of the frequency of damage and disturbance likely to arise. Each of the five types of damage identified generally occurs more frequently the closer the reserve is to a settlement. This provides evidence that nature reserves within 100 m of settlements are vulnerable compared to secluded reserves located over 1 km from the nearest settlement.

Although these results are not surprising, they nevertheless raise important questions. With biodiversity in the UK in long term decline (HM Government 2011) and development pressures to deliver increased housing numbers (Department for Communities and Local Government 2017), it is crucial that impacts are recognised and solutions sought.

Protecting nature reserves from damage should be a planning priority, whilst at the same time the responsible public use of green spaces should be encouraged in order for communities to benefit from the numerous health and wellbeing benefits that they provide.

In this study, all but one type of damage and disturbance decreased between DC1 and DC2 reserves. The first step in the planning process should therefore be to locate new housing developments at least 100 m from reserves, and ideally more than 500 m away. Where this is not possible, the establishment of an ecological buffer, or 'eco-zone', between housing developments and nature reserves could help to reduce the likelihood of anti-social incidents, littering and dog fouling on reserves. Ideally, the 'eco-zone' should be provided within the development site boundary with its creation and management funded by the housing developer with ample space designated for various recreational activities.

Such an approach is taken around the Thames Basin Heath Special Protection Area (SPA) through the creation of SANGS – Suitable Alternative Natural Green Spaces which divert recreational disturbance pressures away from sensitive bird habitats, avoiding bird disturbance incidents (Thompson 2015). For SANGS to be effective they must be more attractive to users than the nearby nature reserve or Special Protected Area, and the careful design of these areas is important in deterring damage incidents.

Education and engagement with local residents is essential in the effort to promote the responsible use of nature reserves and reduce impacts such as dog fouling and anti-social behaviour. YWT offers free membership for residents of new housing schemes to encourage residents to connect with and value the wildlife surrounding their new home. Nature reserve supporter groups ('Friends of' groups) can also be an important tool in reducing damage and disturbance incidents through creating a sense of community ownership over reserves and fostering community cohesion. Associated volunteering and outreach events provide health and wellbeing benefits through physical activity, connecting with nature and meeting neighbours.

The change in land use to accommodate new housing poses a significant risk to nature reserves nationally. Proper consideration of impacts along with sensitive siting and design of housing developments can go a long way towards

avoiding damage and disturbances, and the provision of natural greenspaces within development sites can provide long-term benefits for communities. This is the policy adopted by The Wildlife Trust nationally. At present, planning policy offers limited protection for non-statutory sites, with no specific mention in the National Planning Policy Framework, therefore it can be difficult for NGOs to negotiate adequate mitigation to protect their sites from additional housing. Better protection of non-statutory sites through national and local policy is essential to ensure that new housing sites are properly delivered for both wildlife and communities. Improved facilities such as dog waste bins, interpretation boards and footpaths could also help to promote responsible usage of nature reserves, and help to ensure that reserves remain rich in biodiversity.

Note

The full report on which this article is based is available from the authors on request (lauren.garside@ywt.org.uk).

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