

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF NATURAL AND ENVIRONMENTAL SCIENCES

Biological Sciences

Thesis for the degree of Doctor of Philosophy

THE ROLE OF SUITABLE ALTERNATIVE NATURAL GREENSPACE IN PROTECTING HIGH-VALUE WILDLIFE SITES

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The associated visitor disturbance from new housing developments surrounding the Thames Basin Heaths Special Protection Area (SPA) is a potential threat to the breeding success of three Annex 1 ground-nesting bird species: nightjar *Caprimulgus europaeus*, woodlark *Lullula arborea* and Dartford warbler *Sylvia undata*. In response to this threat from development, a bespoke planning policy - Suitable Alternative Natural Greenspace Strategy (SANGS) was developed to mitigate against this increase in disturbance within the Thames Basin Heaths Zone of Influence. The strategy established greenspaces to divert people from visiting the SPA. A mix of social science methods was used to evaluate SANGS and the theories that underpin it, using a Leisure Constraints Theory Framework.

A postal survey with self-completed questionnaires provided quantitative data that identified the pattern of greenspace visited by residents living in new developments. Significantly more residents visited SANGs than the SPA, and significantly fewer respondents visited their nearest greenspace, and they also travelled further than expected. The strategy did not appear to be attracting dog walkers away from the SPA. A logistic regression model showed that not having prior knowledge of the area's greenspaces, distance from home, good infrastructure and having a companion all significantly influenced greenspace choice.

Focus groups were used to provide a deeper insight into the pattern of greenspace use revealed in the survey. Awareness was identified as an important additional factor that affected the choice of greenspace. Incorporating visiting greenspace into visits to other destinations explained the unexpected longer distances travelled by residents. Policy recommendations emerging from the survey and focus groups are: to raise awareness of and educate residents about SANGs, provide

more greenspace within an optimal walking distance of new developments and provide more substantial areas of greenspace suitable for visits by car.

The semi-structured interviews concluded that the minimum footpath length of 2.3km was impractical on small sites and that a minimum size should be included in the criteria for SANGS. SANGS was thought to provide potential opportunities for linking greenspace provision with wellbeing and biodiversity agendas as well as mitigation for visitor disturbance. Providing play areas in or nearby SANGs would enable families and children to reconnect with nature.

The breeding numbers of all three priority bird species have not decreased since the implementation of SANGS which suggests that it may be providing mitigation for the increased visitor disturbance, although not necessarily in a way that was predicted by the underlying assumptions.

Summary of key findings

Patterns of greenspace use

Significantly more residents visited a SANG than the SPA and travelled significantly further than the 5km threshold identified in previous studies. Significant numbers of participants were not visiting their nearest greenspace.

Residents who were completely new to living in the Zone of Influence were significantly more likely to visit SANGs because they were not attached to the SPA. Distance from home was a significant factor influencing the choice of greenspace and visiting by foot was the travel mode of preference. There was evidence of resistance to driving to greenspace in comparison to walking from home.

Unexpectedly and contrary to previous studies, dog walking was not associated with choosing a SANG neither was rating dog-friendly attributes as important. This is a failure of the policy which is targeted at dog walkers. However, this may have been influenced by the small sample size compared with on-site studies. On-site social interaction was significant in influencing the choice of greenspace and may be mitigating concerns about safety on a site.

The presence of other people was often considered to enhance the safety of a site especially in the case of females but was considered as a negative attribute by some other visitors. Rating good infrastructure on a site such as surfaced paths, way-marking and somewhere to sit down significantly influenced the choice of greenspace type. Environmental and dog-friendly attributes were criteria essential for a SANG but were not significantly associated with choosing a SANG.

Identify factors affecting greenspace choice and effectiveness of SANG strategy

Passive enjoyment of greenspace was considered very important for well-being and facilitating de-stressing.

In the case of general awareness of the TBH Zone of Influence and its conservation issues, established residents and SPA visitors were aware of the issues but showed little interest in visiting any SANGs even if they were aware of their location. However, there was evidence that some older residents were starting to visit SANGs because they were accessible.

Residents living in post-SANGS housing developments were often aware of a bespoke SANG proximal to their housing or larger strategic SANGs such as country parks, but they were generally unaware of the smaller strategic SANGs within 5km of their development. Focus group participants were very supportive of the strategy when it was revealed and explained to them.

Word of mouth was the most common way of discovering the location of a greenspace in the survey and finding the location of greenspace by entrance sign increased the likelihood of visiting a SANG. In focus groups SANG visitors used websites to access information and reported that developer packs were not always available to new residents when they moved into the TBH Zone of Influence.

There is evidence that residents who were familiar with the TBH Zone of Influence before moving into the area continued to visit greenspace that they had previously become attached to and to be new to the area made visiting a SANG significantly more likely.

Expert stakeholder opinion

There is a perceived lack of causal evidence regarding the impact of SANGS but a general acceptance that they are attracting visitors.

There have been several unexpected benefits associated with the strategy: the area has received a large increase in greenspace which is advantageous, regardless of whether it is effective in displacing disturbance or not; and the long-term nature of the agreements facilitate planning for biodiversity. Other unexpected benefits are that developments with greenspace sell easily and SANGs are providing improved accessibility to greenspace for residents as they age in-situ, according to developer interviews.

There is enormous potential to enable people to connect with nature through living in a development with a SANG next-door. New housing is often purchased by young families which increase the potential to embed a connection with nature in childhood that will last a lifetime.

There are concerns that the perpetuity factor of an agreement makes SANGS very expensive along with the resource input needed before it is open to visitors. The length of the walk, 2.3km specified in SANG criteria, is cited as impractical and too short and there is also a lack of suitable SANG land due to the speculative acquisition of land.

There is evidence of collaboration within and between organisations that are involved in SANGS and evidence of a desire to link to the wellbeing agenda. There have been suggestions for a quality benchmarking scheme for SANGS to ensure that the experience of visiting is consistent and high quality throughout the Zone of Influence and adds value to the development as a whole. Support is growing for the strategic, rather than piecemeal, allocation of land for SANGS so it can be both more easily acquired and more effective at attracting visitors.

Policy Implications

Natura 2000 sites, such as the TBH SPA, form the backbone of the European Biodiversity Strategy (EC, 2011) and its Green Infrastructure (GI) Strategy (EC, 2013) through which it is delivered. The National Planning Policy Framework (2018) encourages a network of local GI plans to deliver GI, and SANGS is a welcome addition to GI strategy and an opportunity for not only No Net Loss but Net Positive Impact for biodiversity.

SANGS is gaining popularity as an avoidance strategy both in southern and more recently northern England (New Forest District Council, 2018; Borough of Poole, Bournemouth Borough Council, Christchurch Borough Council, Dorset County Council, East Dorset District Council, Purbeck District Council, Wealden District Council, 2015 and Mansfield District Council, 2017).

The results of an EU fitness check on the EU Birds and Habitat Directives (European Commission (EC), 2016) showed that they are fit for purpose but to fully achieve the objectives, co-ordinated implementation between local authorities and stakeholder partners should be improved. The TBH SANGS is cited as an exemplar for avoidance mitigation policy against housing development, in an international review of mitigation hierarchy (University of Cambridge Conservation Research Institute, 2015).

Political support for SANGS is mixed in the TBH Zone of Influence it is also considered expensive by both local authorities and developers and local authorities experience difficulties in bringing forward land suitable for SANGs. Given the problem of sourcing SANGs, purchase of large tracts of land to create much larger SANGs which provide a more credible alternative to the SPA could be more cost-effective and logistically less complex.

In the light of the results from this study, large strategic SANGs and bespoke SANGs next to developments, both with natural play areas and biodiversity improvements, could enable delivery the Accessible Natural Greenspace Standard (ANGSt) agenda (2006a) and GI strategies.

Future work

This study has evaluated the effectiveness of SANGS outputs on the target population of residents in new housing developments. However, to evaluate the longer-term impact of SANGS on Annex 1 bird populations, the next logical step is to explore the causal relationships of other environmental variables. This will enable the impact of the strategy to be evaluated in comparison to the impact of other external factors. Generalised linear mixed models could be used to quantify the effects of environmental variables, for example, house building, visitor pressure, distance from footpaths, the occurrence of uncontrolled burning and condition of habitat on breeding bird counts.

Evidence from the repeat SPA survey results indicates that the presence of SANGs may be influencing the visiting behaviour of established residents (Fearnley and Liley, 2013). The postal survey can be repeated using a stratified sample of both pre and post-SANGS residents in equal numbers, to find out if a compensatory visitor flow between the SPA and SANGs has occurred and if it affects the effectiveness of the strategy.

Analysis of more data from dog walkers is needed before the results and conclusions from this study, that SANGs failed to attract dogwalkers, can be generalisable.

Recommendations

The following recommendations are listed by research recommendation first then best practice recommendations and finally recommended policy adaptations which may be more challenging to implement.

Research Recommendations

- Identify if there is a causal relationship between environmental factors and the Annex 1 species breeding populations

Best Practice Recommendations

- SANG owners and managers continue to improve awareness of SANGs by ensuring developer packs have the relevant information, increase on-site public engagement and increase signage to SANGs and within SANGs for visitor management where appropriate
- The TBH JSP to hold a stakeholder event to disseminate the research results to date amongst interested stakeholder groups
- SANG owners and managers to provide Infrastructure to encourage visitor social interaction such as suitable outdoor seating
- SANG owners and managers to maximise the opportunity to create a more biodiverse SANG environment where possible

Policy Recommendations

- Local authority planners, developers and Natural England aim to support developments with adequate integral greenspace as bespoke SANGs where possible on the ground
- Planners and design consultants to integrate play areas into greenspace to potentially embed a connection to nature in children that can enable the next generation to access therapeutic benefits from visiting a greenspace
- Natural England to modify the criteria for SANGs to increase the minimum size of a SANG so the 2.4km can be easily accommodated
- Replace the requirement for strategic SANGs with larger 'Super SANGs' on a par with the size of some of the SPA sites of at least 100ha and preferably 500ha according to the ANGSt agenda
- SANG ownership, management, and monitoring should be the responsibility of an enduring public body with the associated inalienable rights
- Strategic plans to encourage the integration of SANGS into other strategies relating to health, wellbeing, green infrastructure and biodiversity

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