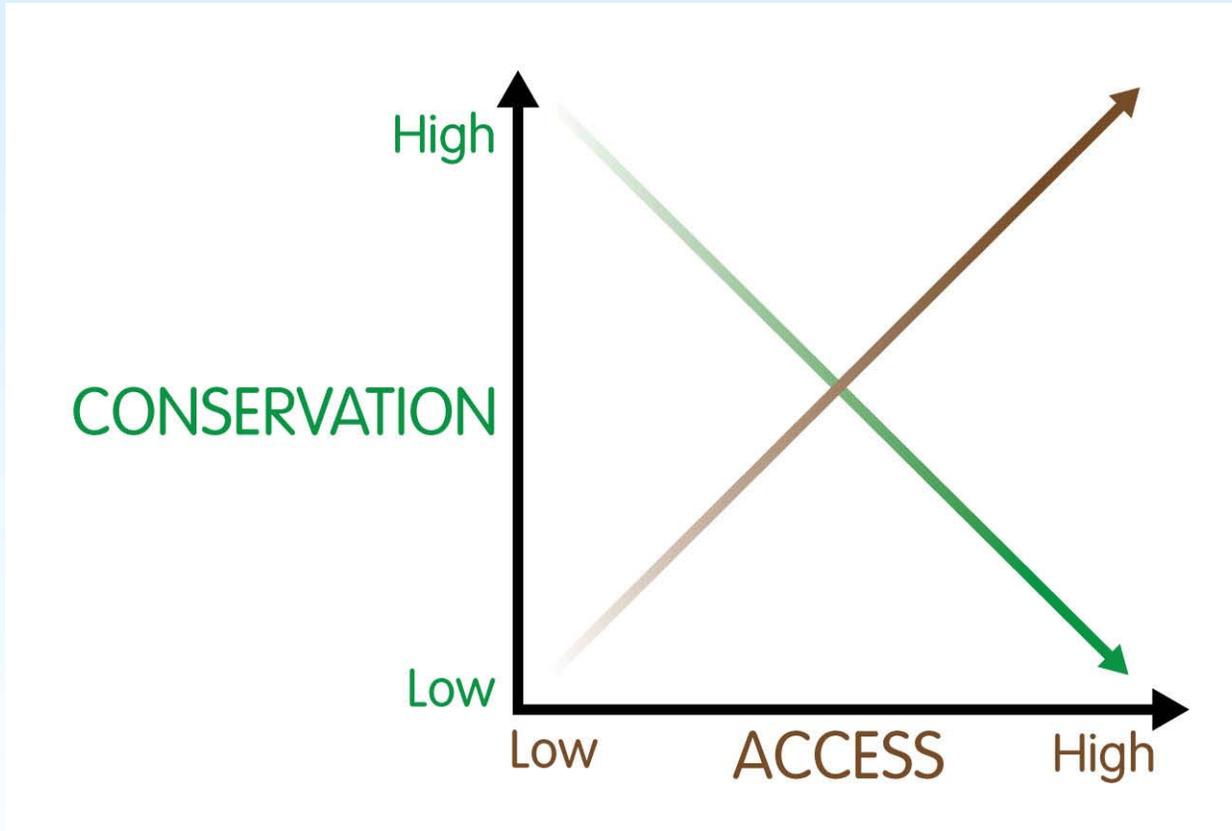


A stylized map of the Pacific Northwest coast of North America, showing the coastline of Washington, Oregon, and California. The landmass is colored in a light green, and the surrounding water is a solid blue. The map is positioned on the left side of the page, with the coastline facing right.

Coastal Disturbance Study

edited & updated by
Peter Rushmer

The conservationist's dilemma:



In a context of increasing access pressures on The Wash and North Norfolk coast, any attempt to mute the impact of human disturbance seems advisable



Purpose of study:

- NE's Condition Assessment for The Wash and North Norfolk Coast EMS has shown unfavourable condition of two species Little Tern (BTO species code AF) and Ringed Plover (BTO Species Code RP)
- The study considers the impact of a range of human disturbance on breeding and wintering birds throughout the EMS/North Norfolk Coast AONB, building on the extant EMS Incident Recording Process
- It will propose site management strategies that might effectively deal with this, against a background of high visitation levels (currently estimated at over 1.5m) that are expected to increase



Analysis Undertaken

a. Disturbance studies examined

- Over 40 separate studies considered
- Abstracts of the key studies produced
- Incident records reviewed

b. EMS sites visited

- All managed EMS site managers interviewed and two unmanaged areas examined (plus Winterton)



Key Findings

The key learning's fell into three topic areas:

i. Science

- There was little or no evidence of disturbances' impact
- However there was sufficient to infer that human disturbance had a negative effect on bird's breeding productivity and winter state

ii. Site issues

- Offsetting the unconditional assessment demands there be action
- The key human disturbance problem still requiring attention emerged as being dog walkers

iii. Site management

- Need to continue to apply a suite of practical measures
- Plus adopt a comprehensive and consistent educational communications strategy across the entire marine site



Key Findings

i. Science:

- Most early studies proved unhelpful as they dealt exclusively with disturbance effect, when it is population impact of disturbance that is the real concern
- As it is hard to collect, there is little evidence of disturbance's impact
- Effects of human disturbance do not necessarily lead to population impact
- There is greater significance, however, for populations from disturbance impact on every breeding stage than from mortality rates for non-breeding roosting birds from energy drains/limited feeding triggered by human disturbance
- All forms of human disturbance impact can also have an effect in subsequent years



Key Findings

ii. Site issues:

- The numbers of birds on any given site are the product of a range of factors - climate change, habitat alterations, overall population trends, inclement weather, food/prey availability, predation and human disturbance
- Site managers' capacity to intervene is largely confined to the last two factors
- Where site topography is right (viz. Freiston & Titchwell) birds' habituation to disturbance occurs, reducing human disturbance's effect



Key Findings

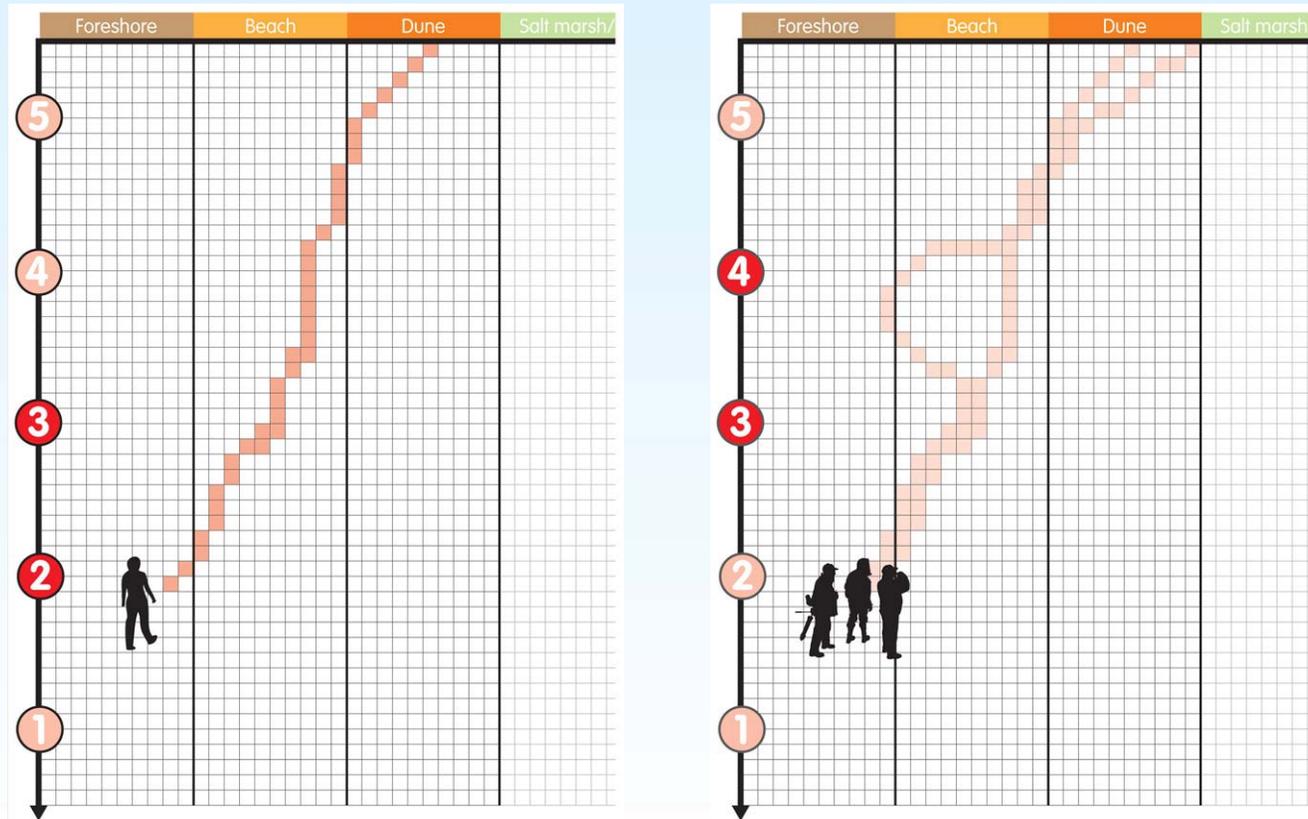
ii. Site issues:

- BTO WeBS counts recorded perceived disturbance throughout the year - demonstrating this is a year-round issue for breeding birds and winter roosting birds
- The annual pattern of this BTO WeBS disturbance data indicated that walkers and dogs incidence are near constant throughout the year (there was only a 12% difference between the summer and the winter months)
- As these counts are conducted early in the day it is thought they disproportionately under-represent visitors
- It is therefore reasonable to conclude that 'locals' are likely to be of more significance than 'outside of area' visitors (60/70: 40/30)



Key Findings

ii. Site issues: the footfall area is critical

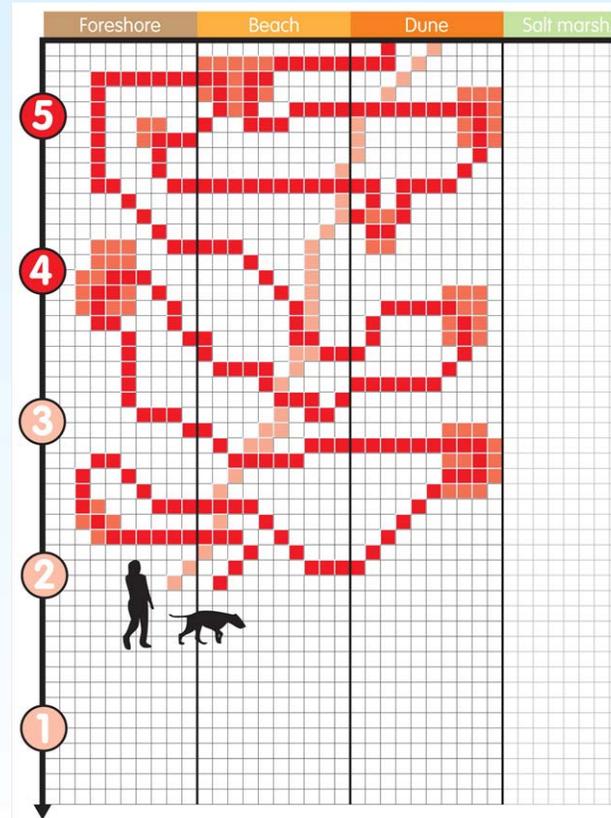
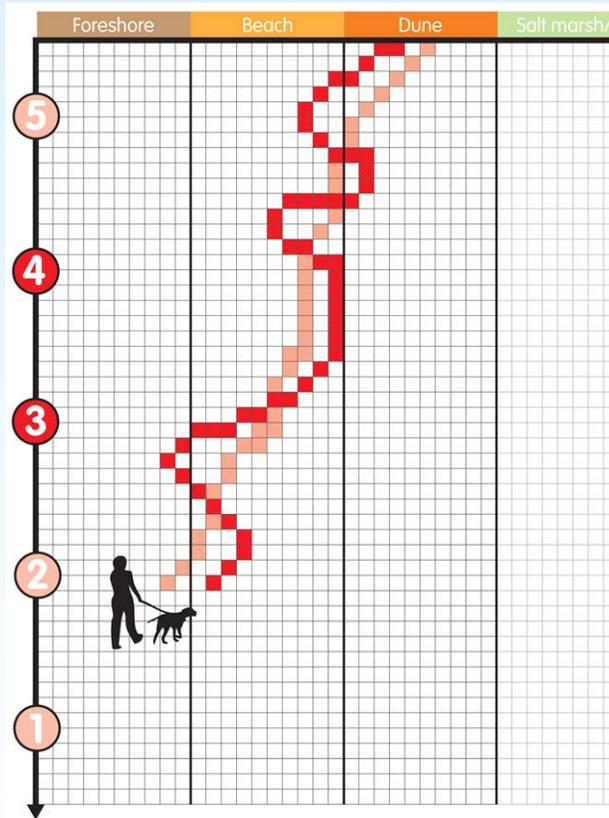


Solo walkers cover less than 4% of a site, whereas groups easily cover 8-10%



Key Findings

ii. Site issues: the footfall area is critical

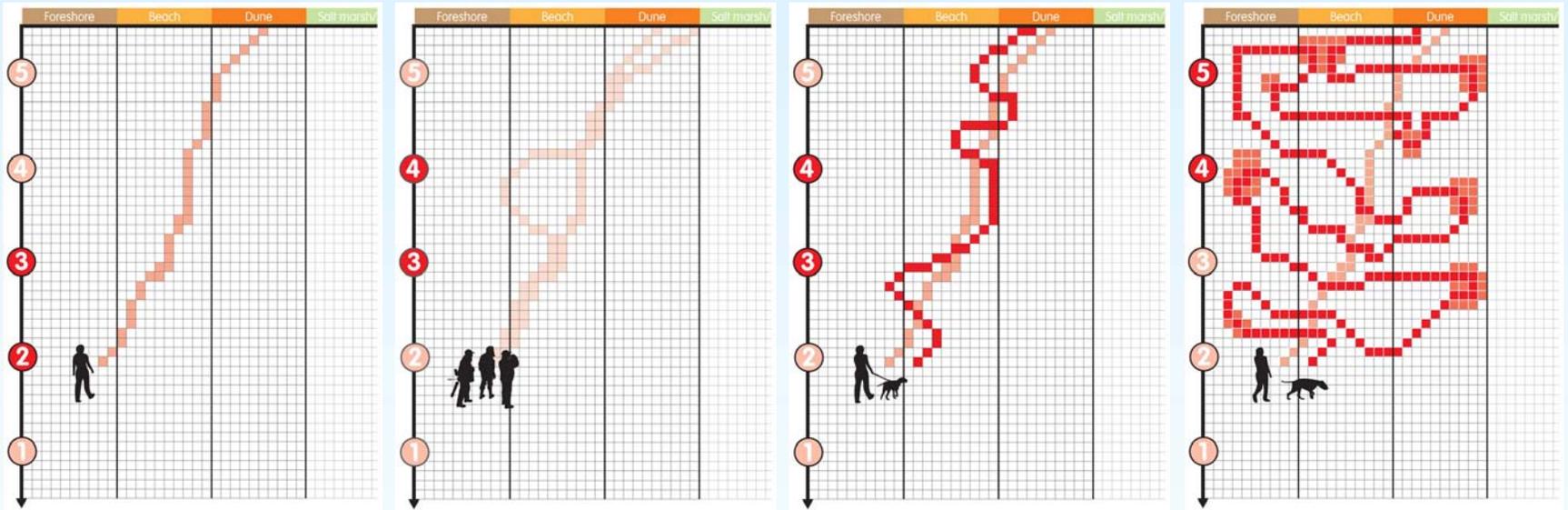


A dog on a lead will only cover about 10%, while a loose dog easily covers 30%+



Key Findings

ii. Site issues #3: the footfall area is critical



*Dog walkers appear to have x2 the effect on birds than do walkers
Loose dogs have between x 3 and x4 more effect than dogs on leads
But, putting the above in context, predation has x4 more impact
than human disturbance on bird productivity*

Key Findings

ii. Site issues:

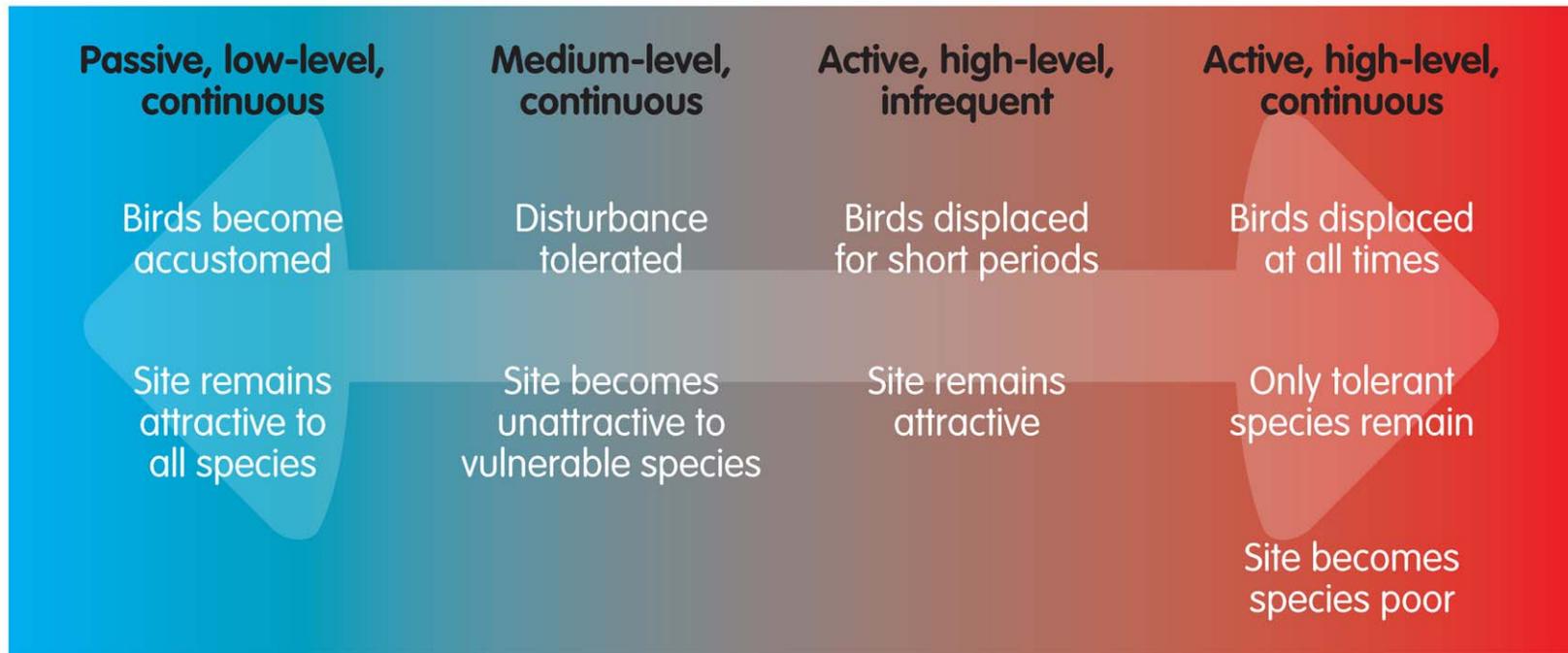
- Ground-nesting bird productivity data appeared to be in inverse proportion to human disturbance, i.e. the higher the level of human disturbance invariably (but not always) the lower bird productivity figures tended to be, e.g. little terns at Scolt Head Island vs. Blakeney Point (1: 0.5)
- With virtually the same habitat, distance from feeding grounds and degree of predation control, the main difference between Scolt Head Island vs. Blakeney was visitor levels (5k: 180k)
- Despite the limited evidence, a simple hypothesis was generated, namely that there is a negative correlation between the degree of human disturbance and ground-nesting breeding birds' productivity and/or roosting birds' fitness



Key Findings

ii. Site issues:

A range of disturbance effects and site outcomes



(Diagram based on Hockin et al, Journal of Environmental Management, vol 36 ,1992)

High visitation levels create a species poor site

Key Findings

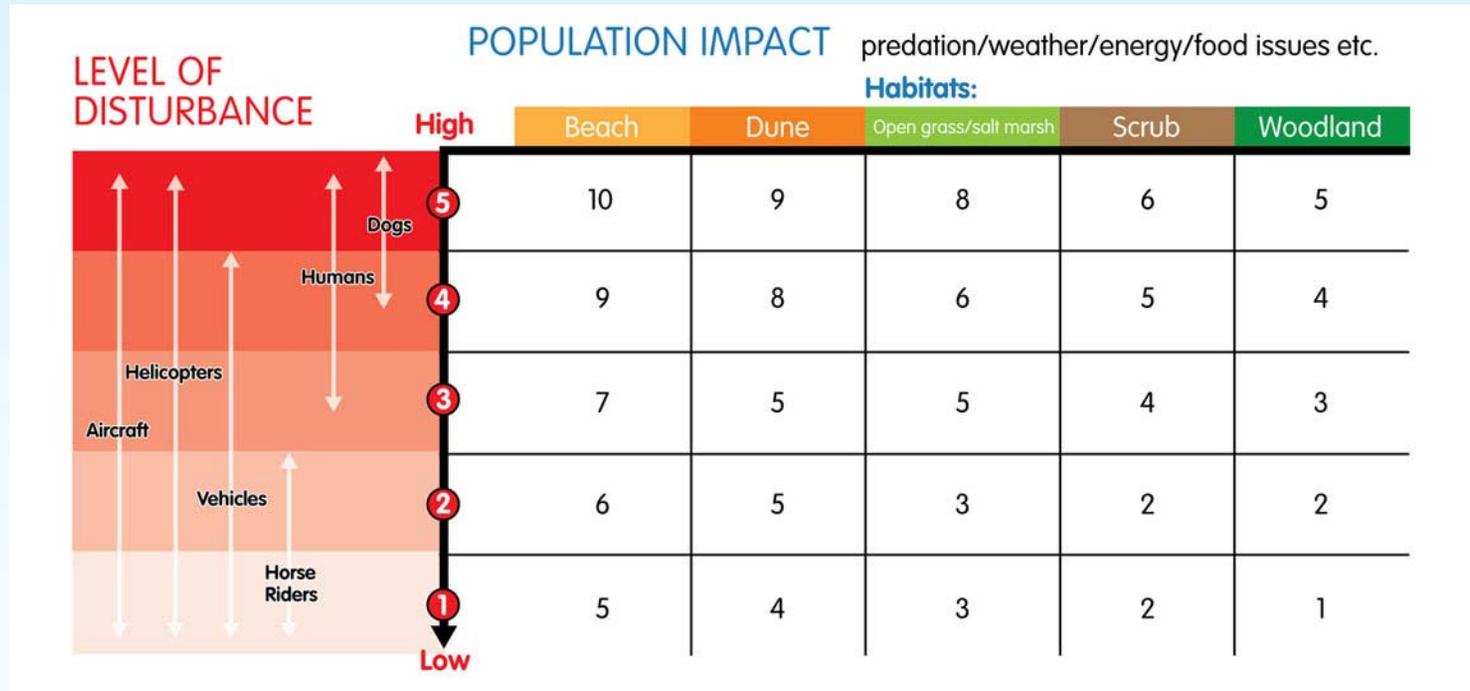
ii. Site issues:

- This hypothesis could be expressed as follows:
 - Increased footfall = greater disturbance effect
 - Greater disturbance effect = greater disturbance impact
 - Greater disturbance impact = some species decline
- All this information enabled a disturbance impact model to be developed



Key Analysis Based On Findings

Site issues: Disturbance Impact model developed



Three variables captured: scale and type of disturbance, range of habitats and incidence levels (disturbance incidents plus number/types of species on site)

Key Analysis Based On Findings

Disturbance Impact model

- This model then permitted disturbances' effect and impact to be scaled
- Combining this understanding with breeding productivity data for the sites and applying third party research (e.g. Durwen Liley – predicting consequences of human disturbance for Ringed Plover populations and assessing loss by trampling, predation and desertion) predictions of local impact and species vulnerability to disturbance can be made
- From this it is possible to determine where it is most appropriate to allocate effort and scarce resources



Key Findings

iii. Site management:

- Muting human disturbance should have a positive effect on bird populations
- Otherwise the consequences for sites could over time be theoretically significant



Key Findings

iii. Site management:

- Increase knowledge about the impact of human disturbance amongst communities and visitors through a common approach to disturbance interpretation and initiatives across all sites
- The example of kite surfers at Brancaster demonstrates people can be encouraged to self-regulate their behaviour if a case is well-presented
- Encourage palliative site user behaviour (keeping to trails; giving breeding areas a wide berth; avoidance of beaches at high tides when birds are most vulnerable, etc.)
- Encourage community engagement to help spread this knowledge and thereby curb the degree of disturbance
- There could be more opportunity for adopting a zoned approach when managing larger sites



Tactical Options

Comprehensive solutions are needed to overcome disturbance problems:

- A mix of both physical and communications tactics
- On the physical front, sites' access measures mostly need reinforcement and, possibly, some new introductions
- With communications a consistent approach needs to be adopted that is...
- ...holistic, deploys a mix of media/tactics and confronts a variety of influence points
- The overall approach must also be flexible so that, site-by-site, both structural (physical) responses and message delivery vary to suit local conditions

