



Humber Winter Bird Disturbance Study

Durwyn Liley



Disturbance



- Difficult to define
- Difficult to understand scale of impact
- Avoidance, direct mortality, behavioural response and physiological impacts
- Difficult to manage



Methods

- October & January
- 4 visits in each month; to 10 locations
- Each visit around 1hr 45 minutes (70 hrs per month)
- Focal area of 500m around survey point allows systematic recording
- ‘Diary’; Bird Count; Response of Birds;
- Visits not at random, but to some extent targeted (tide/weather) – e.g. Welwick 2 visits close to dusk





Survey Point 4

23rd September 2013

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● Survey Locations

□ Survey Area



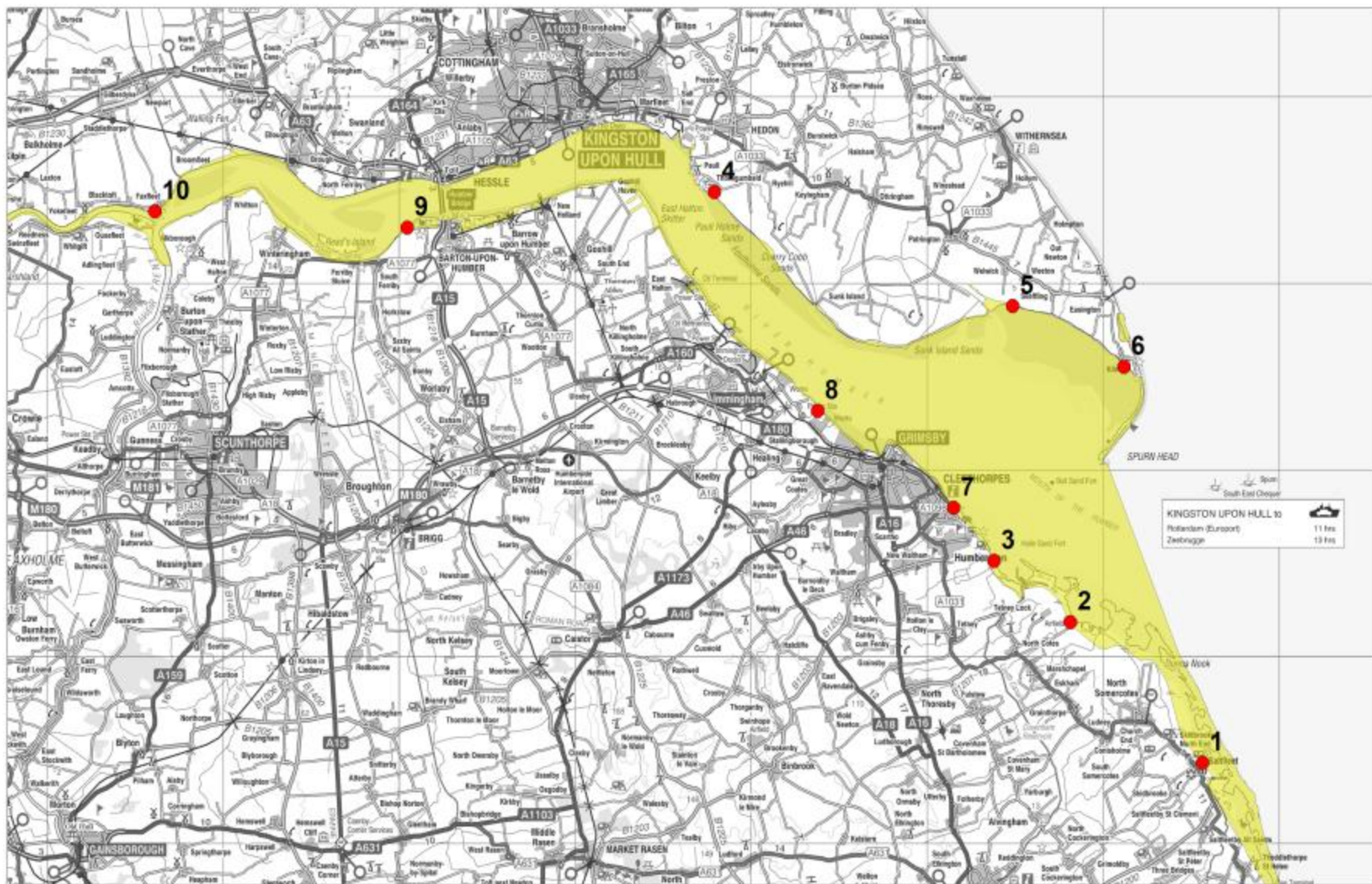
Survey Point 8

23rd September 2013

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● Survey Locations

□ Survey Area



Map 1: Survey locations.

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- Red dot: Survey loc
- Yellow shaded area: SPA area



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Recording Responses

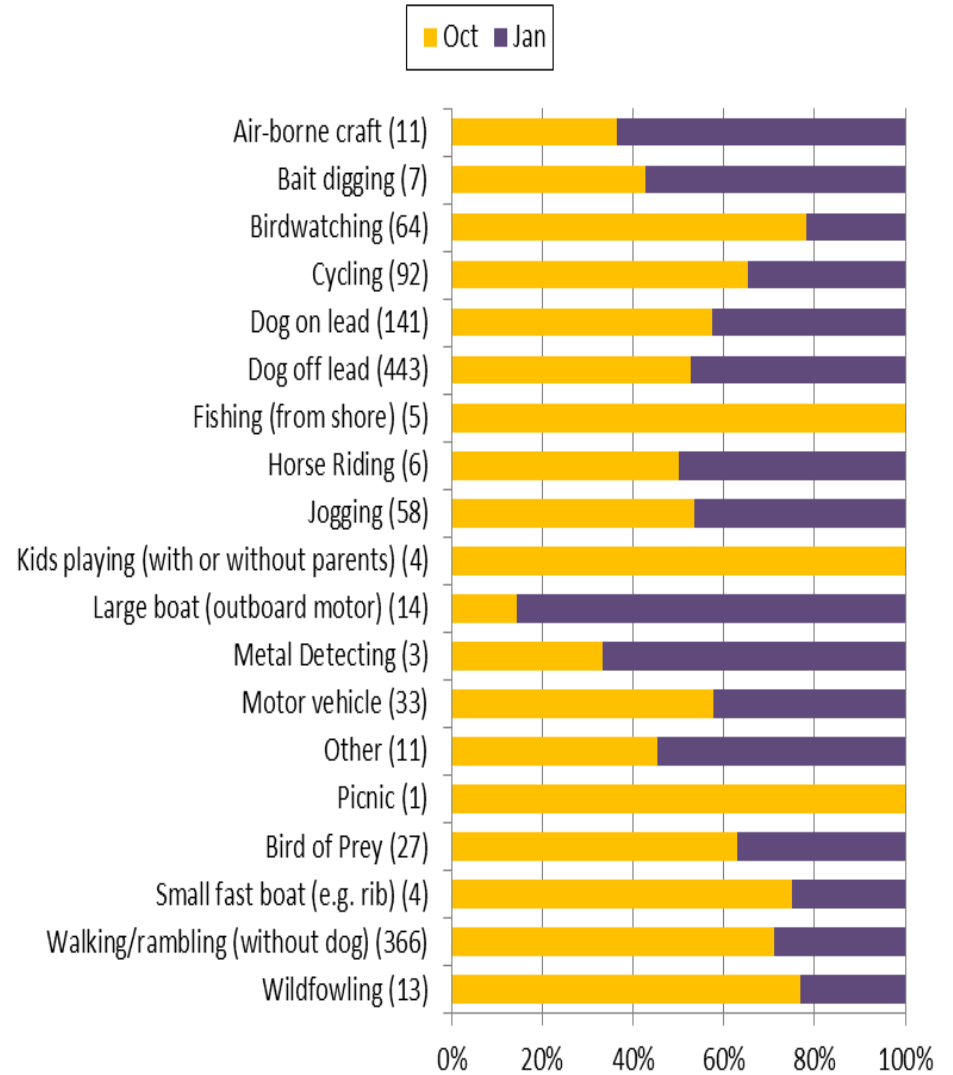
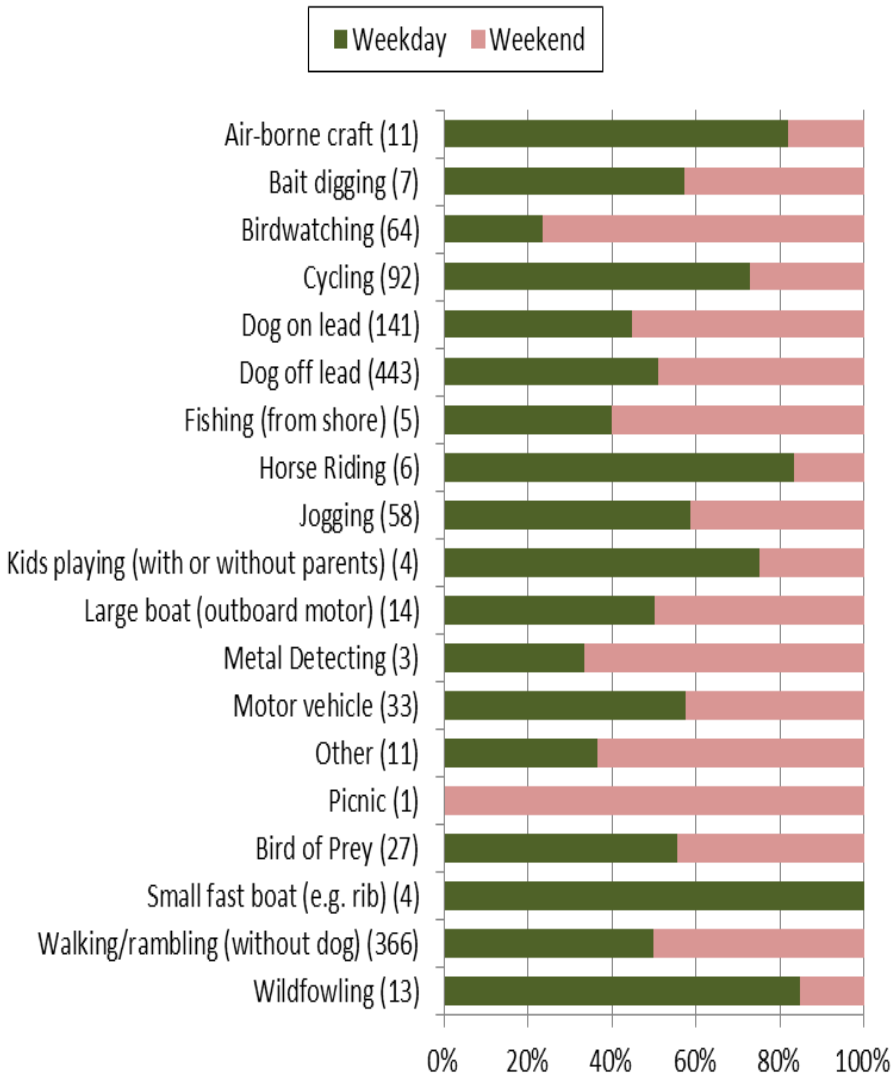
- Diary involved all activities/events during 1 hr 45 minutes. Outside and around 500m focal area.
- If event occurred within 200m of birds in the focal area – or birds responded (any change in behaviour), then event was a potential disturbance event and triggered entry on response form.
- Systematic recording including no response



Results: Recreation

- 1,304 events in the diary
- 2,280 people and 839 dogs
- Dog walking most common activity: 45% of records. 3x as many dogs off lead as on. Most commonly recorded activity on intertidal habitats and shoreline.
- In general most activities on shore, but at Humberston, Horseshoe Pnt & Cleethorpes relatively high proportion activities on intertidal
- Water-based activities only accounted for 1.5% of observations and were restricted to 2 sites, Chowder Ness and Faxfleet.

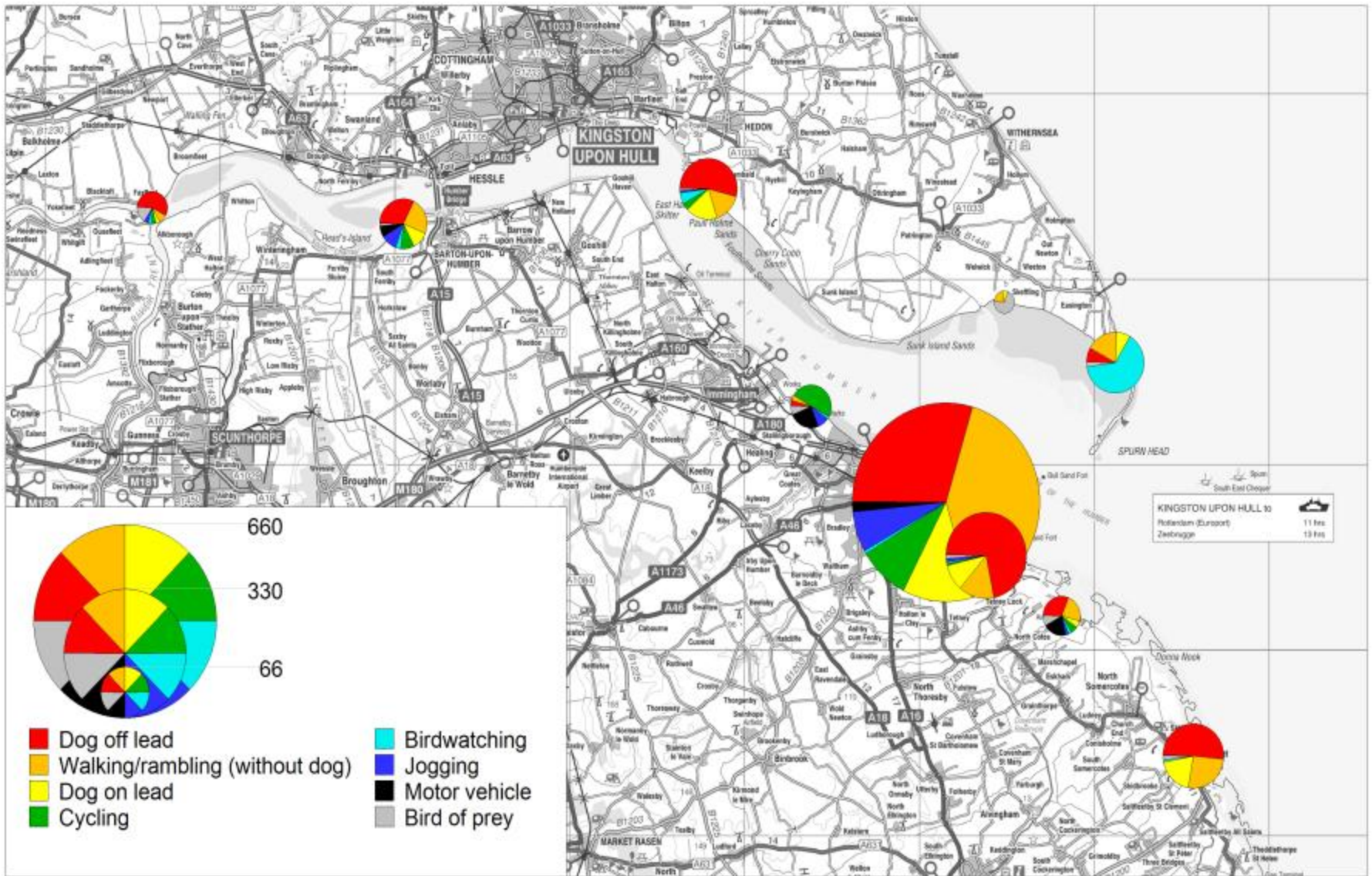




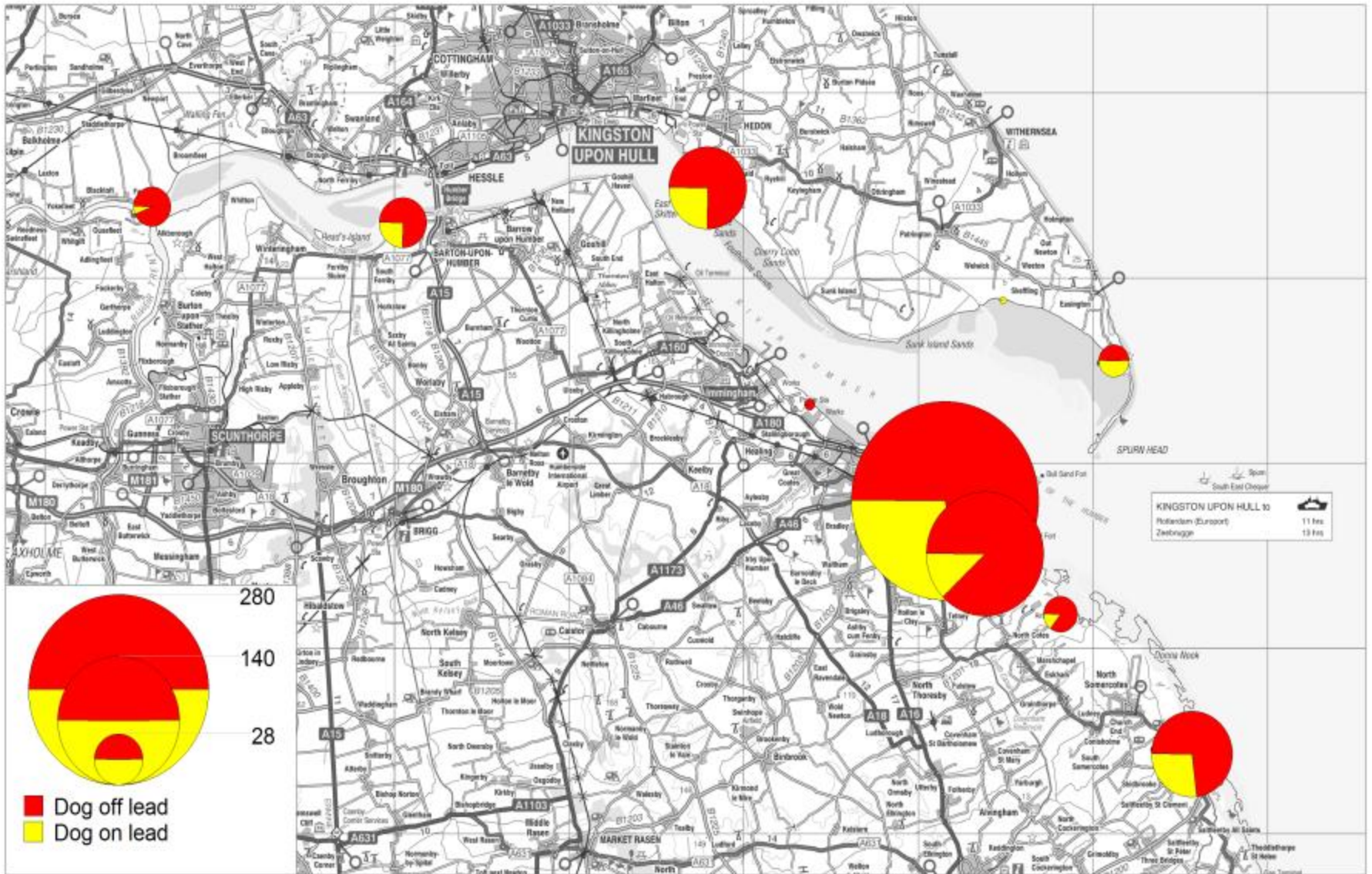
Birdwatching more common during weekend; cycling, jogging, wildfowling during the week. Oct busier than Jan.



Map 2: Number of activities recorded on the intertidal, water and shore at each survey local

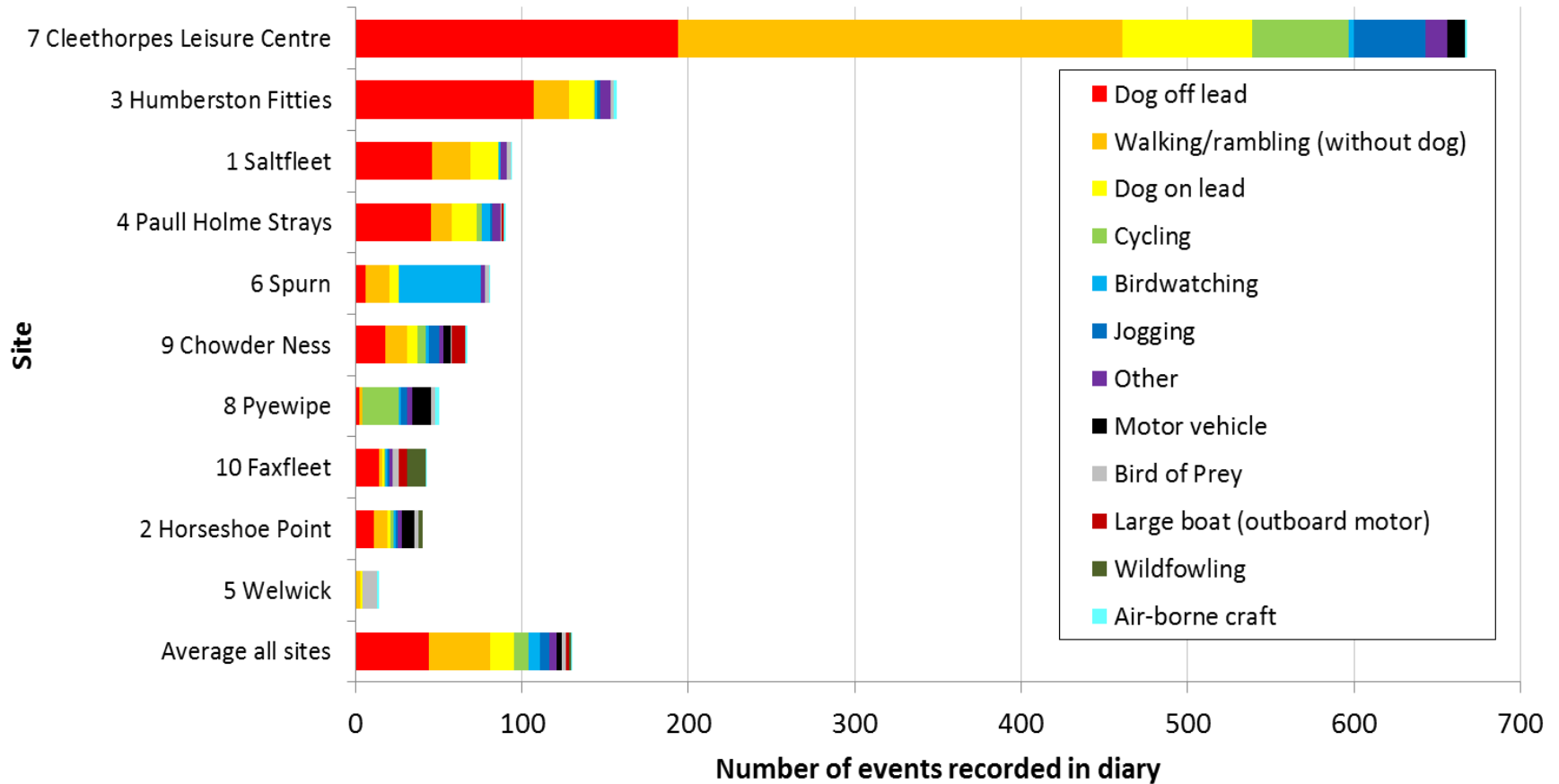


Map 3: Number of activity records at each survey location for activities with >15 observations

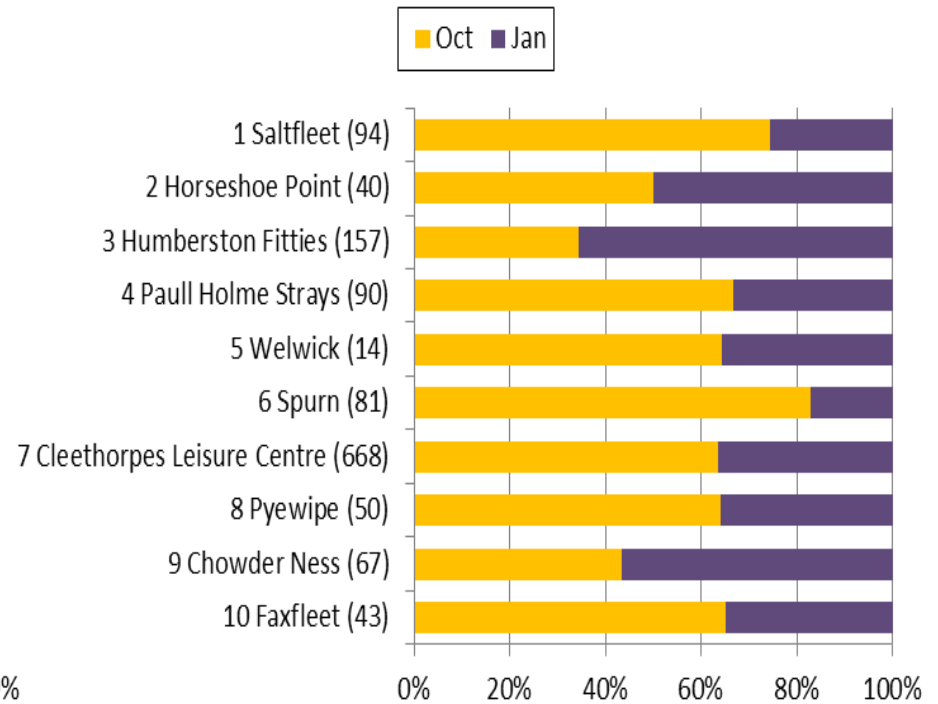
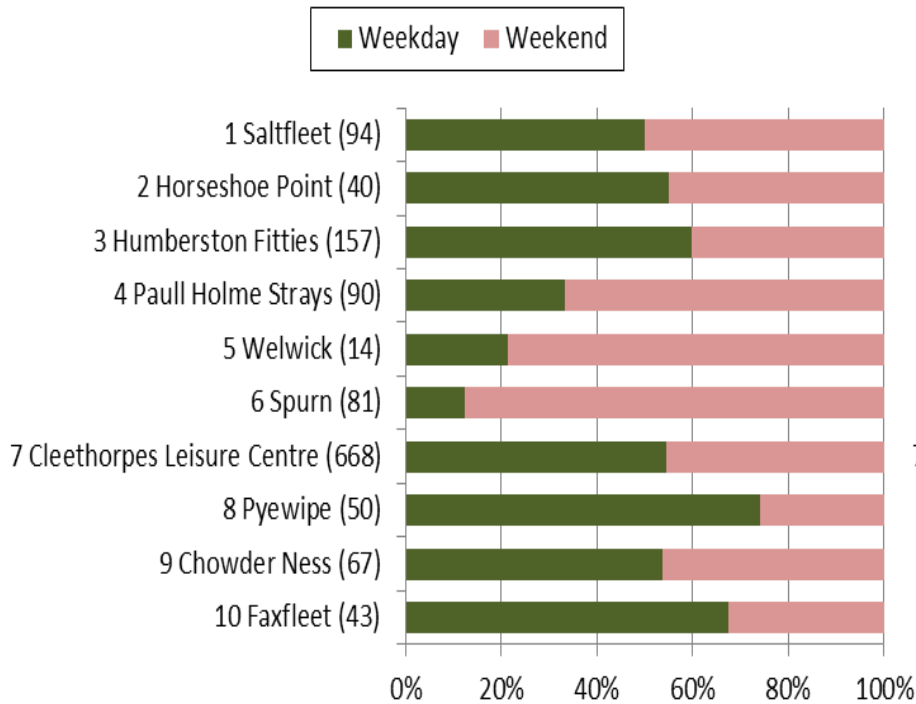


Map 4: Number of dogs on and off the lead at each survey location.

Activities by location



Activity by site



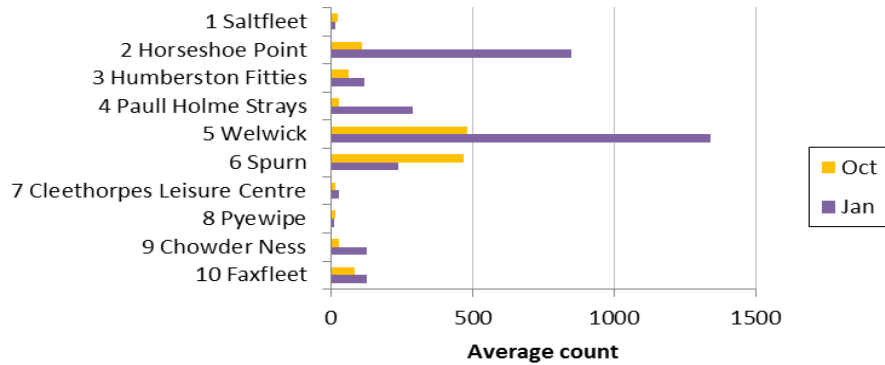
Bird Data



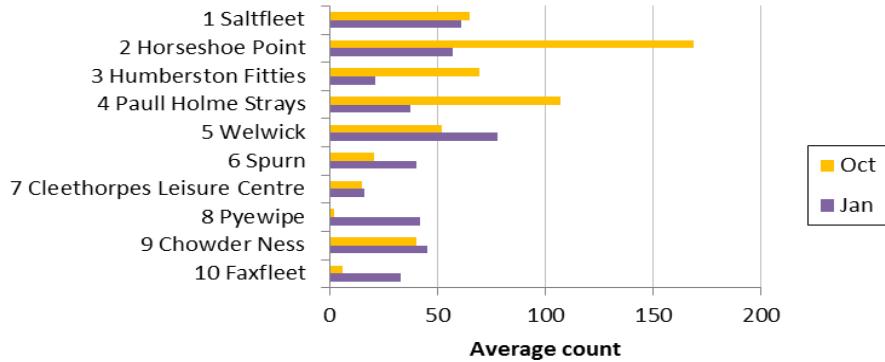
- 29 bird species (waders, wildfowl, herons, divers & grebes etc. recorded).
- No. of species recorded per location varied from 9 to 28
- Wader numbers higher in Jan at 7/10 sites; wildfowl nos. higher in Jan at 6/10 sites

Average counts in Jan & Oct

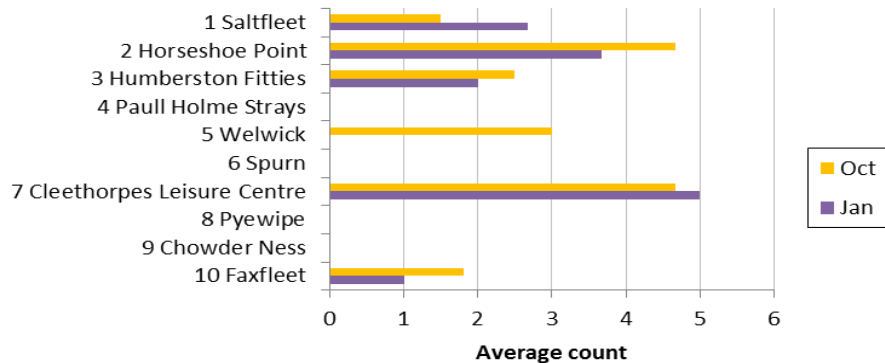
Waders

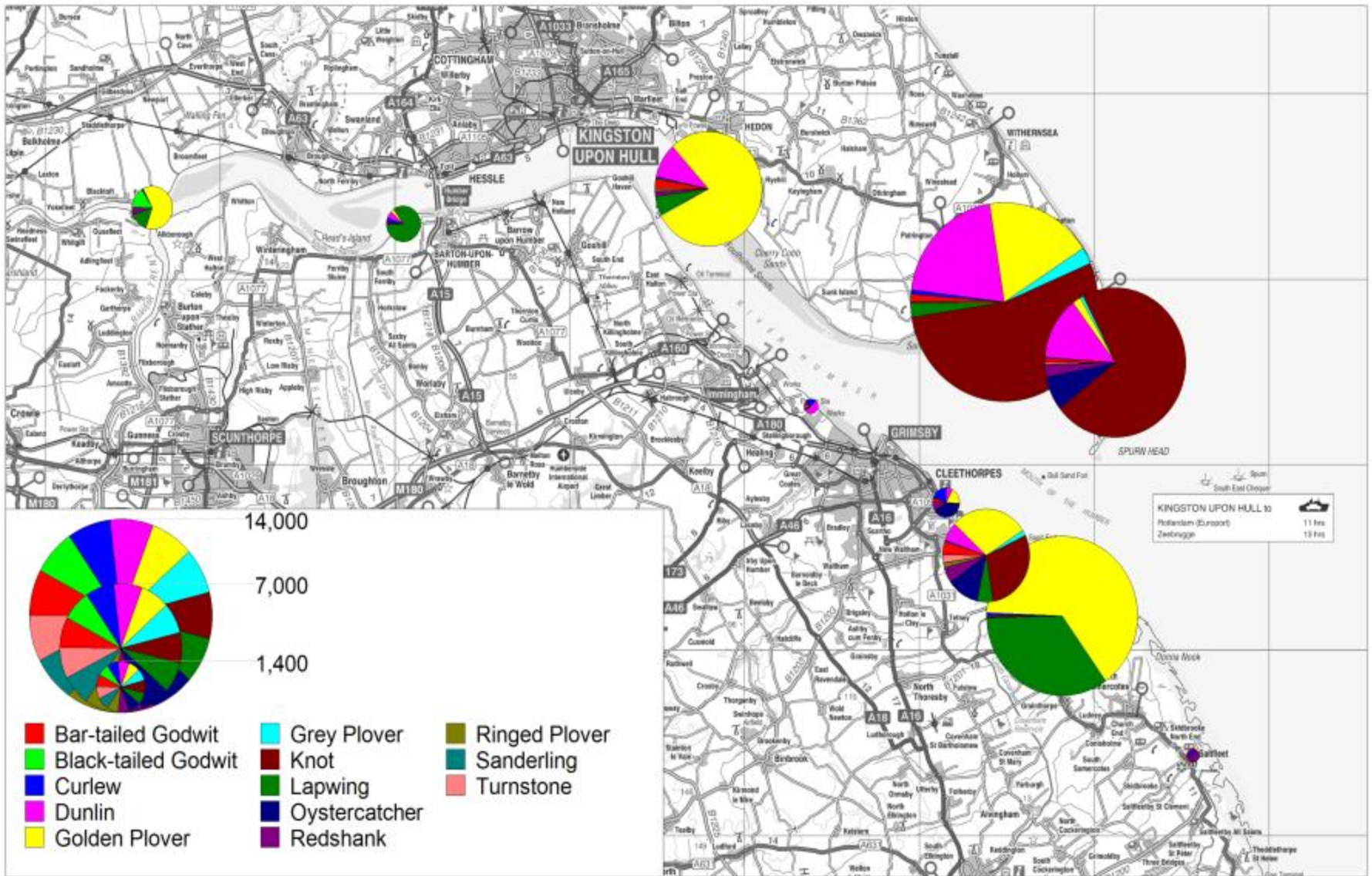


Wildfowl

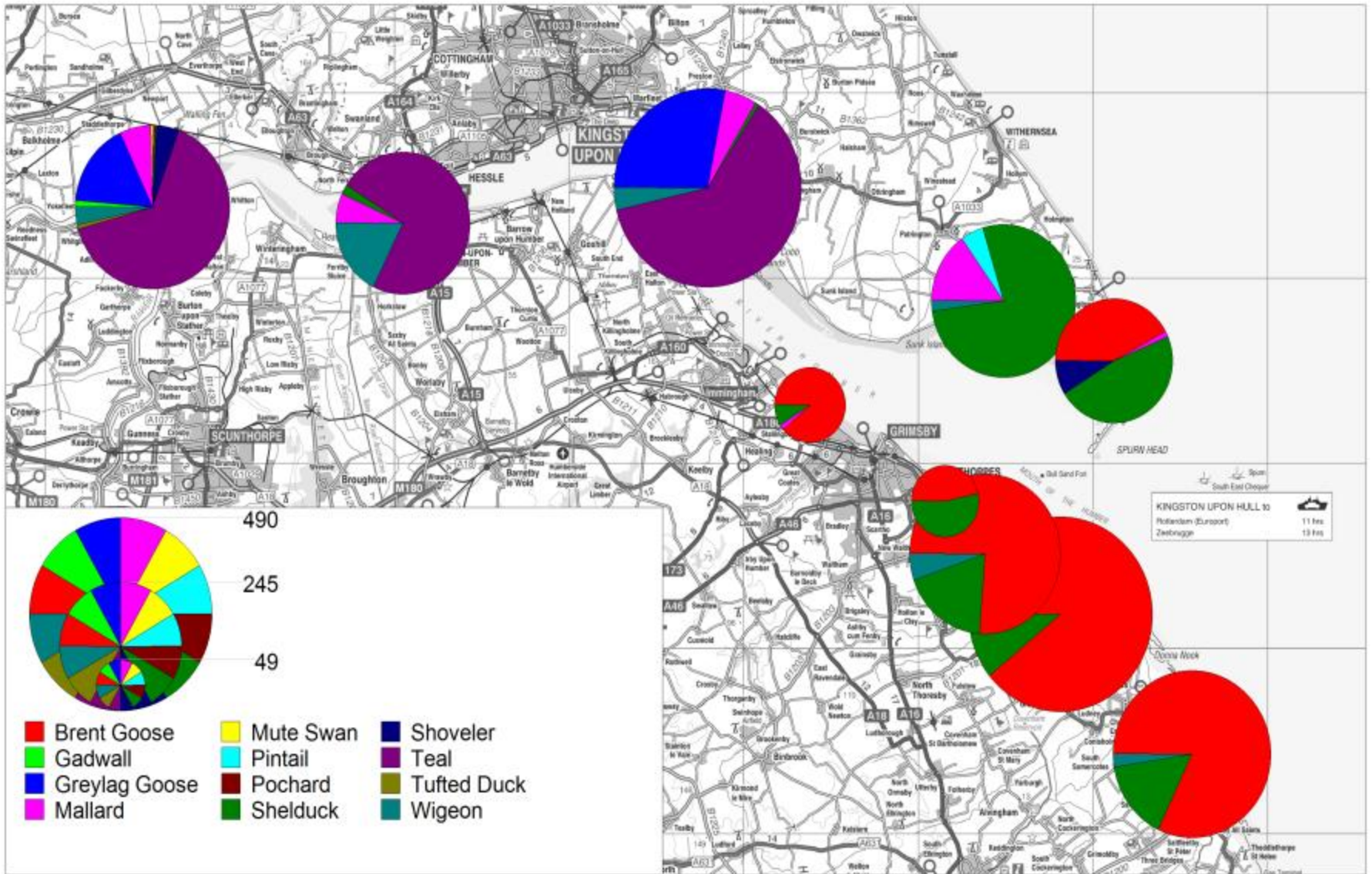


Other species





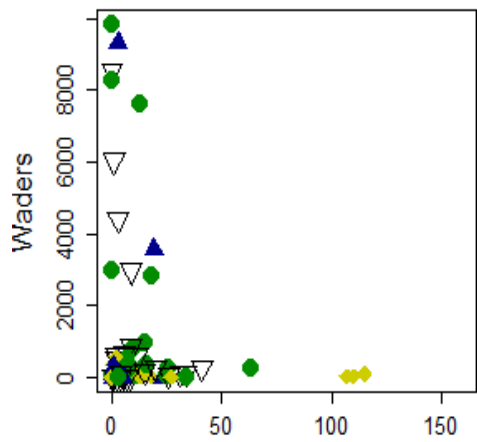
Map 5: Maximum wader counts at each survey location.



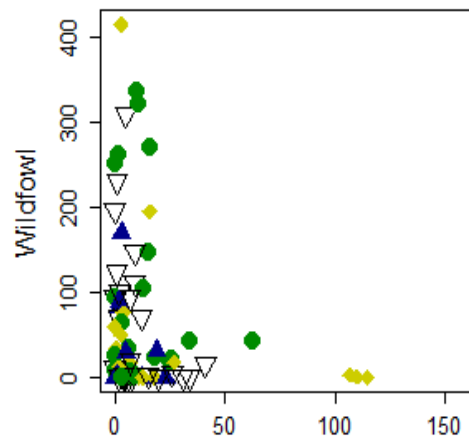
Map 6: Maximum wildfowl counts at each survey location.

Bird numbers in relation to access

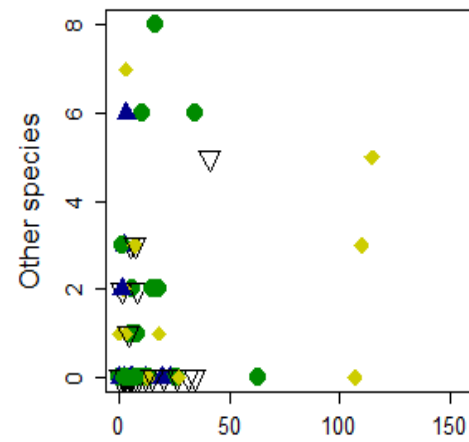
- Little evidence that density of birds at sites was related to level of access overall at each site
- Using count data from each visit in GLM we tested whether bird numbers at end of count were related to the number of visitors. Significant negative effects for waders and wildfowl. Tide state and location also significant for waders and location for wildfowl.



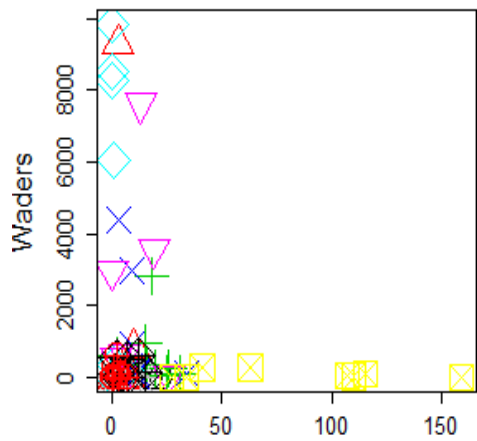
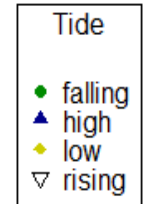
Groups of people observed during count



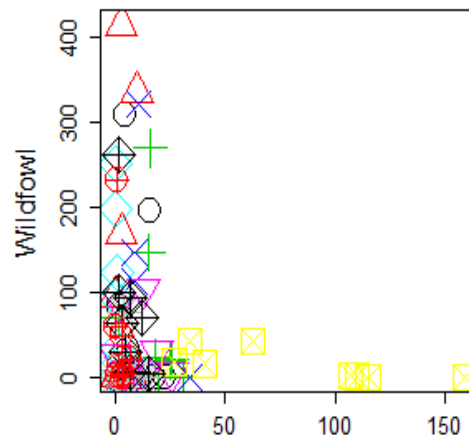
Groups of people observed during count



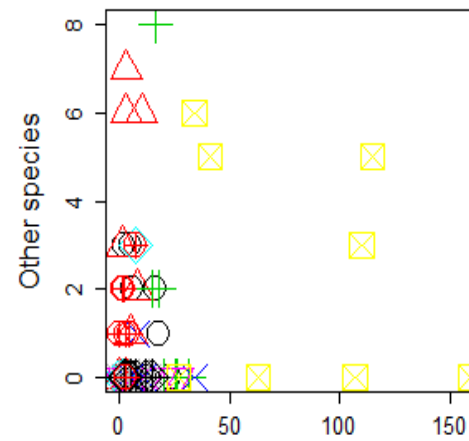
Groups of people observed during count



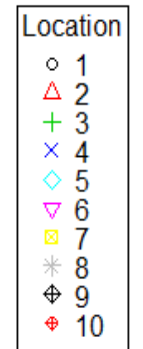
Groups of people observed during count



Groups of people observed during count

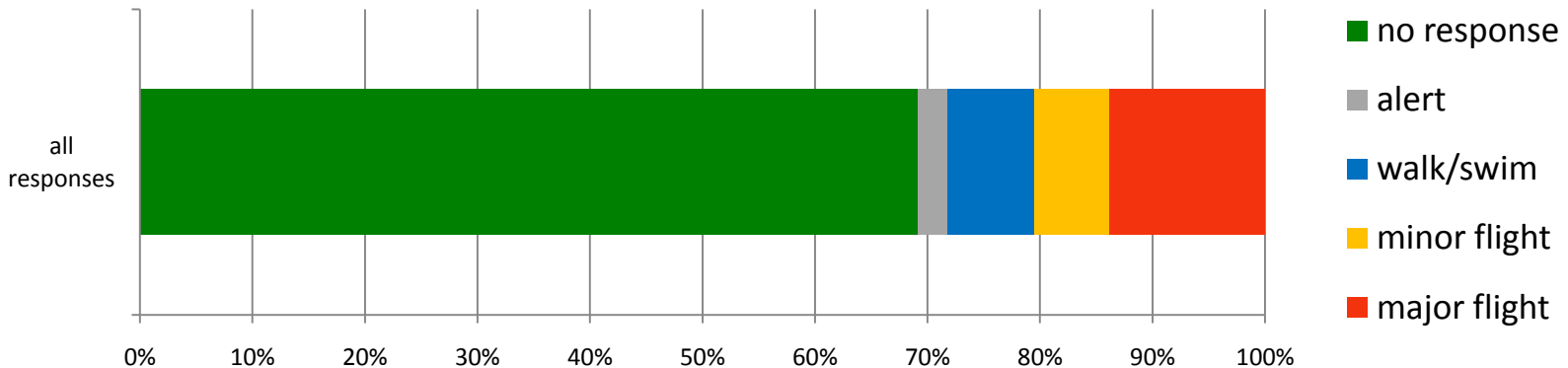


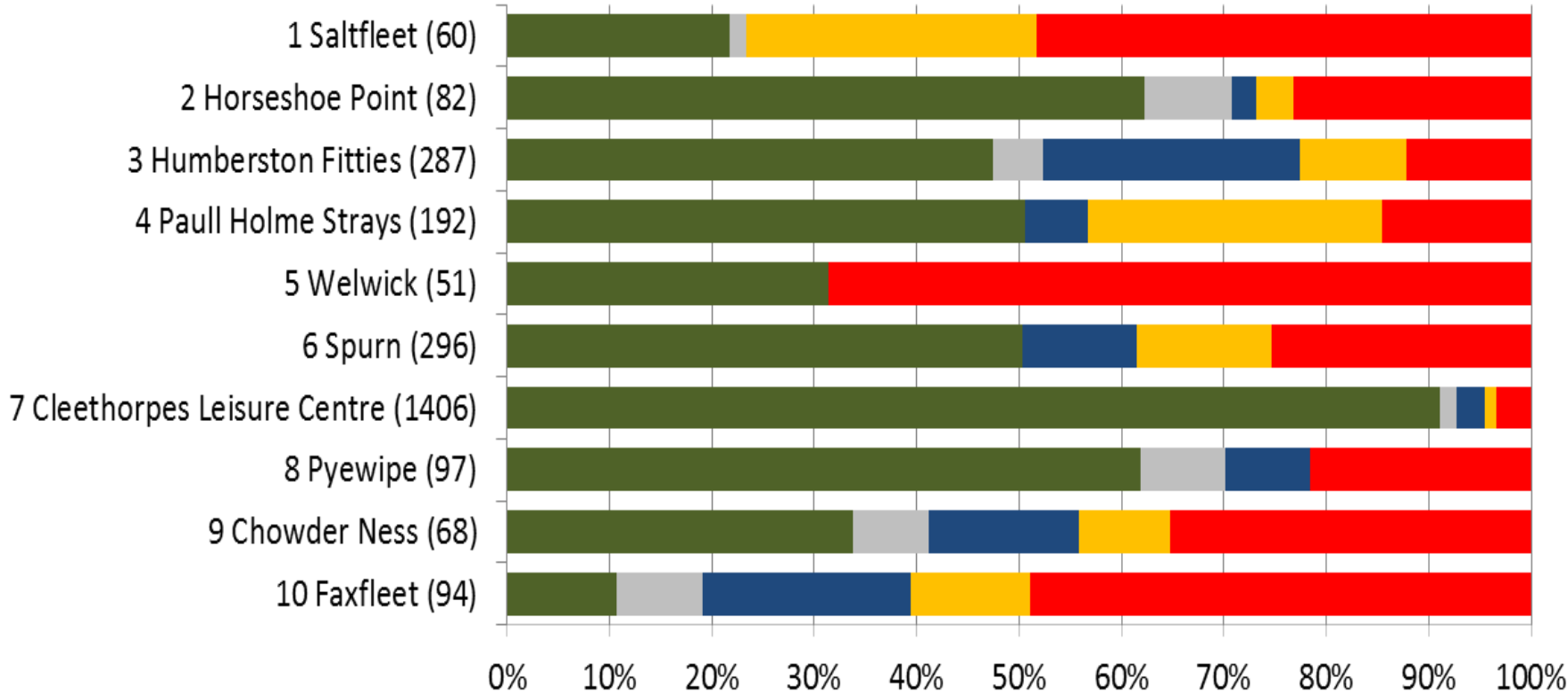
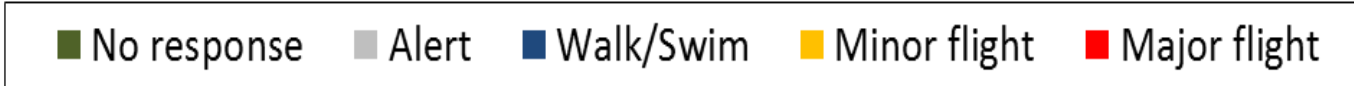
Groups of people observed during count

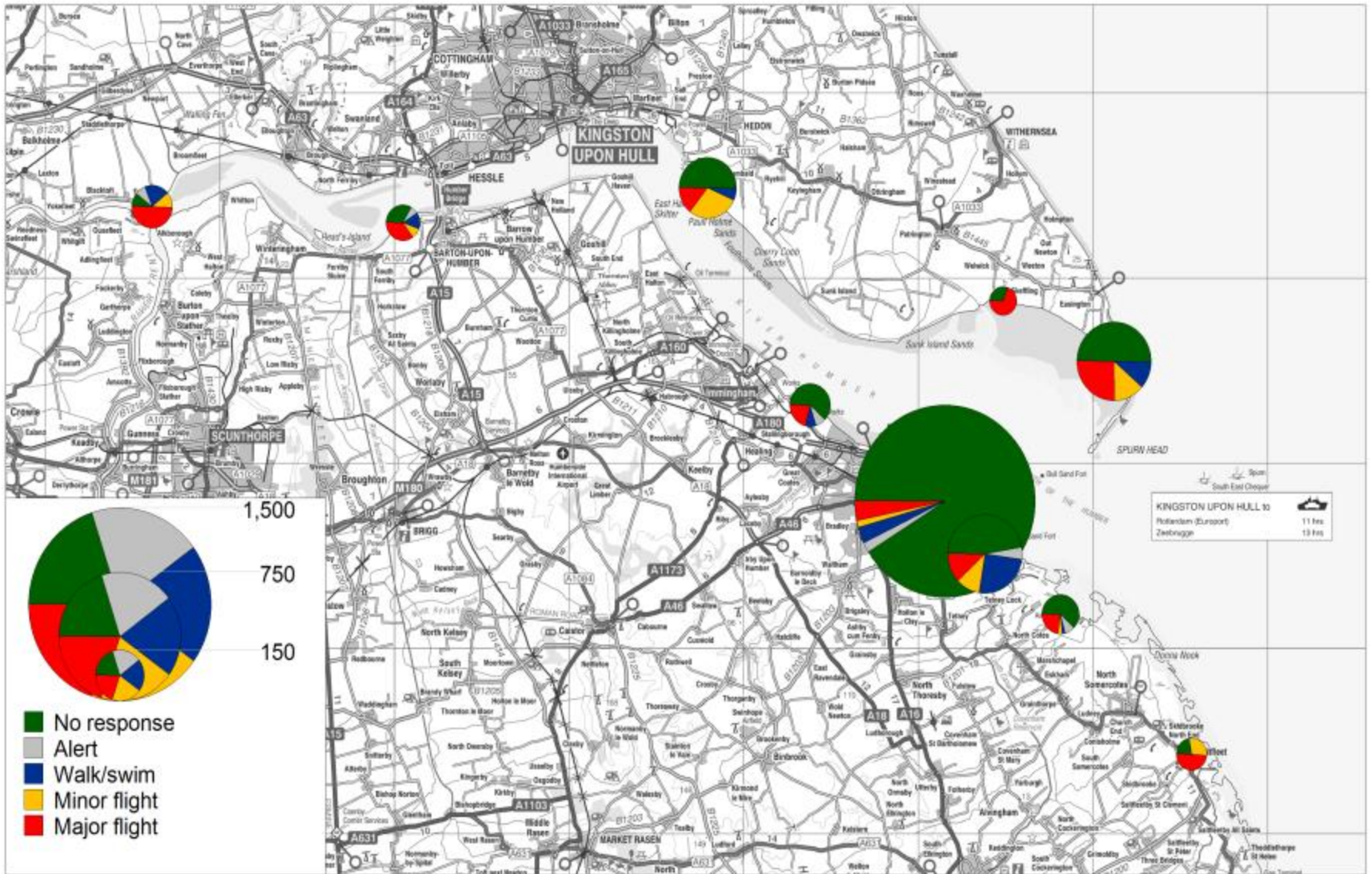


Behavioural Response

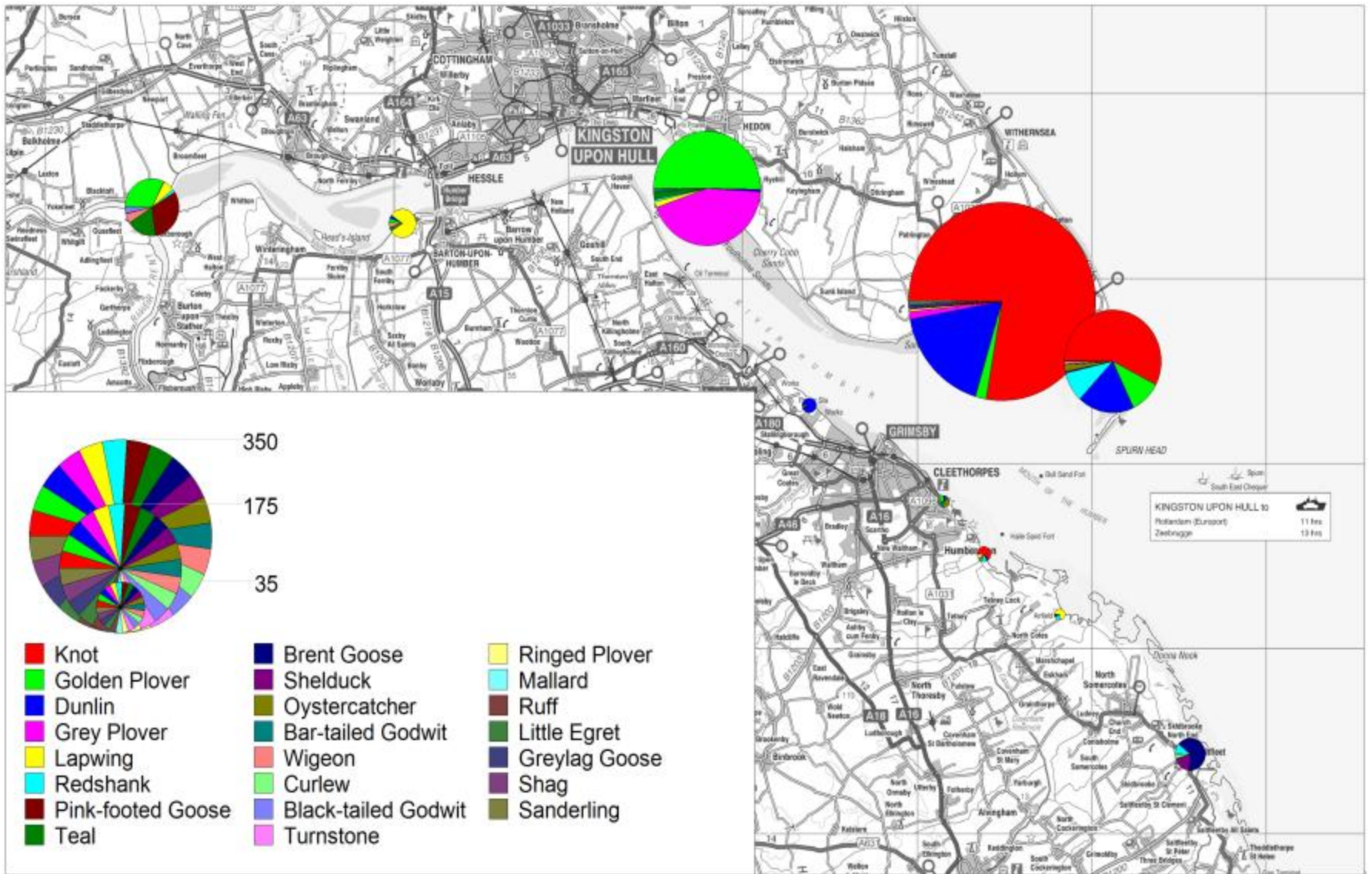
Response	Number (%) of species-specific disturbance events		
	Total	October	January
No response	1851 (69.2)	1232 (74.4)	619 (60.7)
Alert	70 (2.6)	34 (2.1)	36 (3.5)
Walk/Swim	205 (7.7)	109 (6.6)	96 (9.4)
Minor flight	179 (6.7)	53 (3.2)	126 (12.4)
Major flight	370 (13.8)	228 (13.8)	142 (13.9)
Total	2633 (100)	1626 (100)	1007 (100)





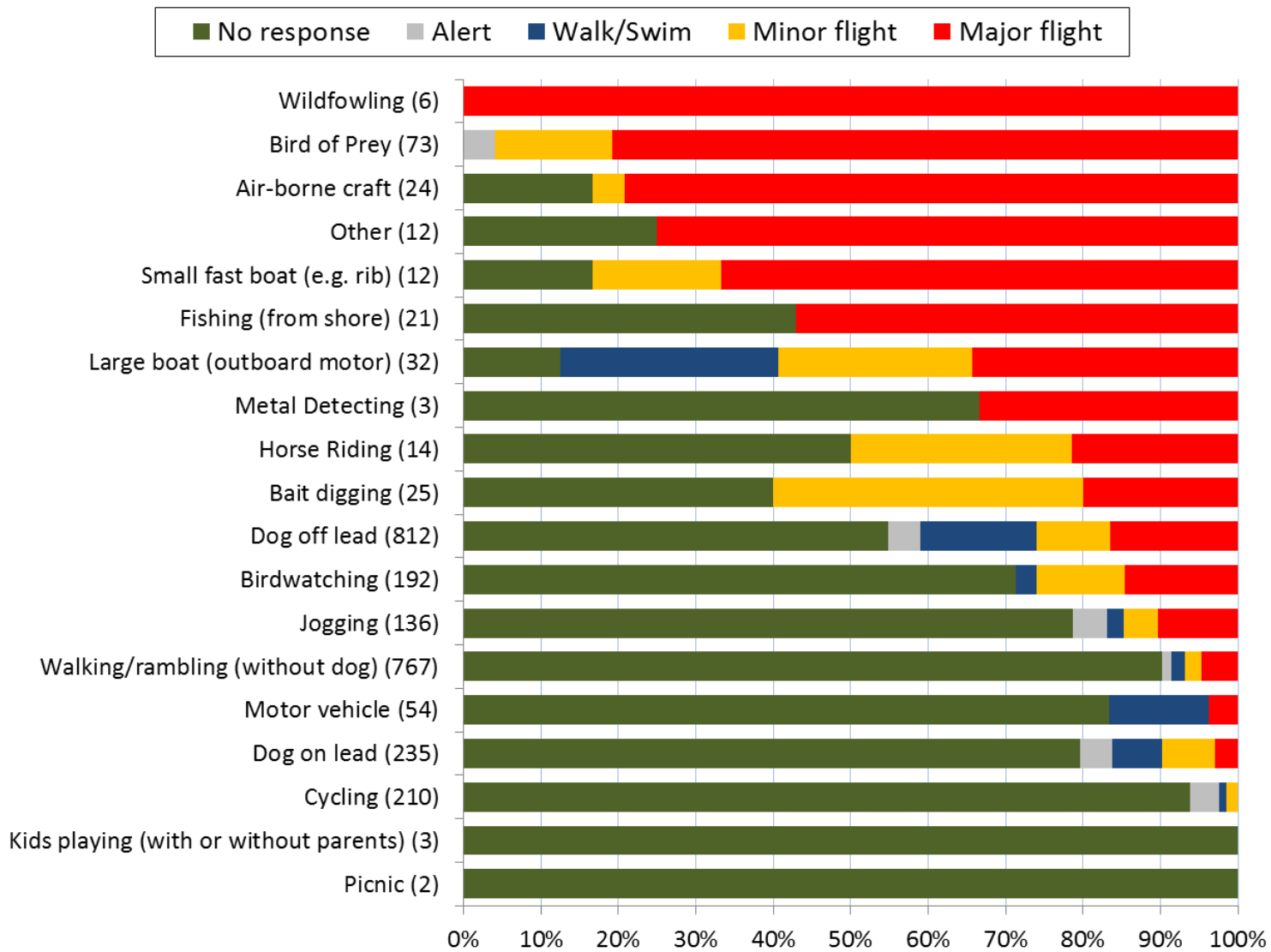


Map 7: Responses to potential disturbance events recorded at each survey location.

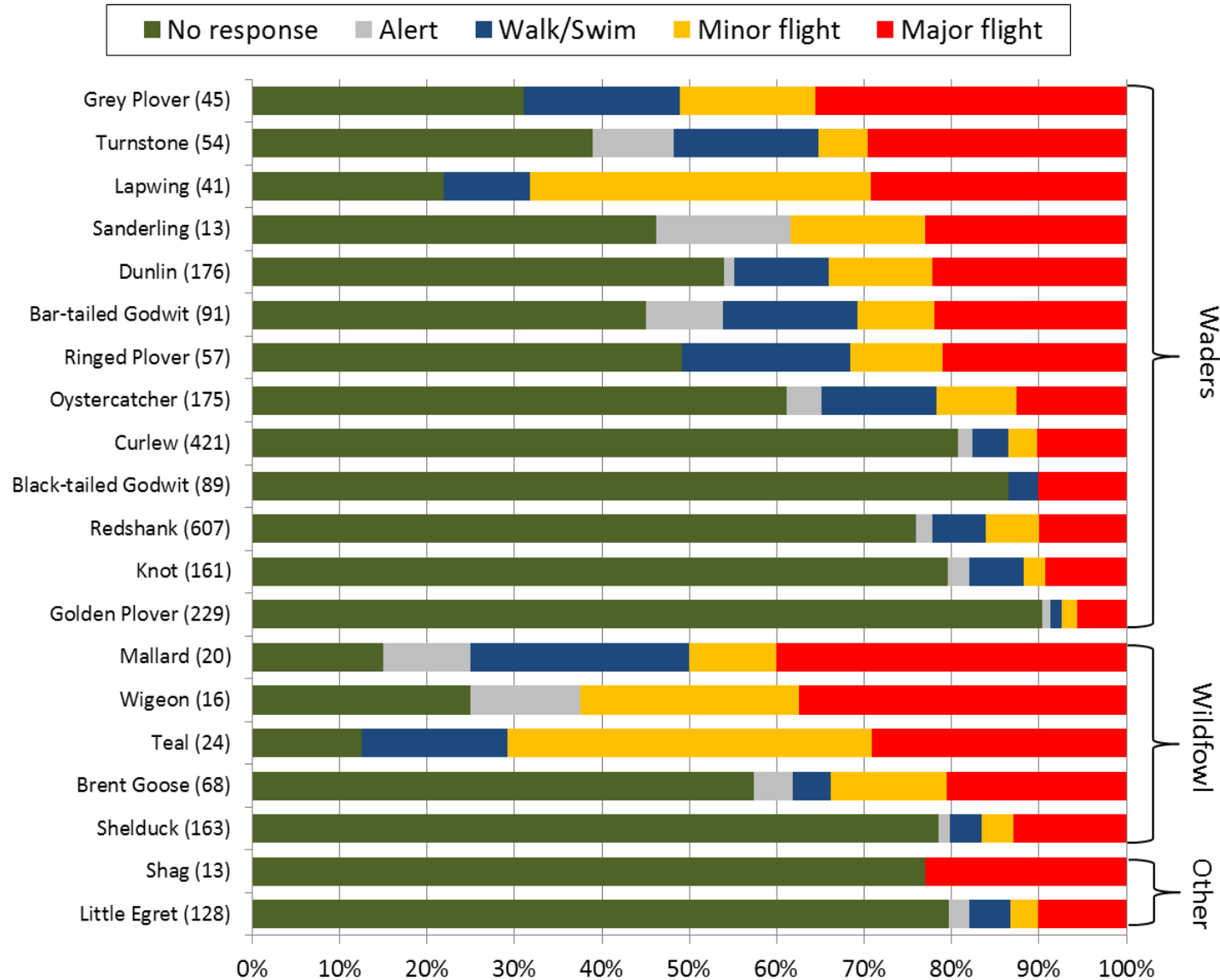


Map 8: Flush rate (number of birds responding with major or minor flights) per hour

Responses by Activity

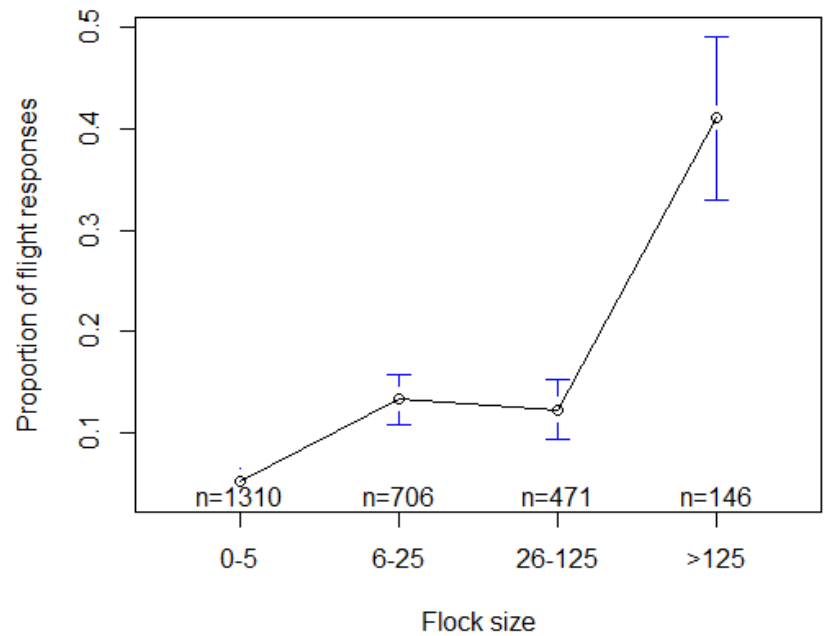
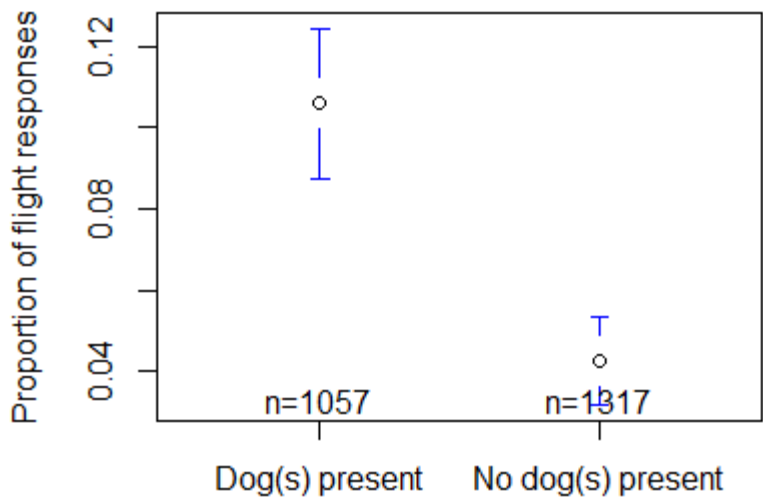
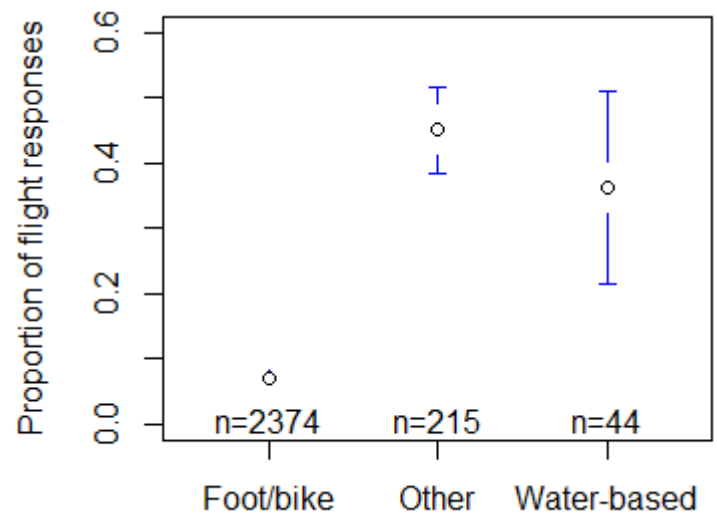
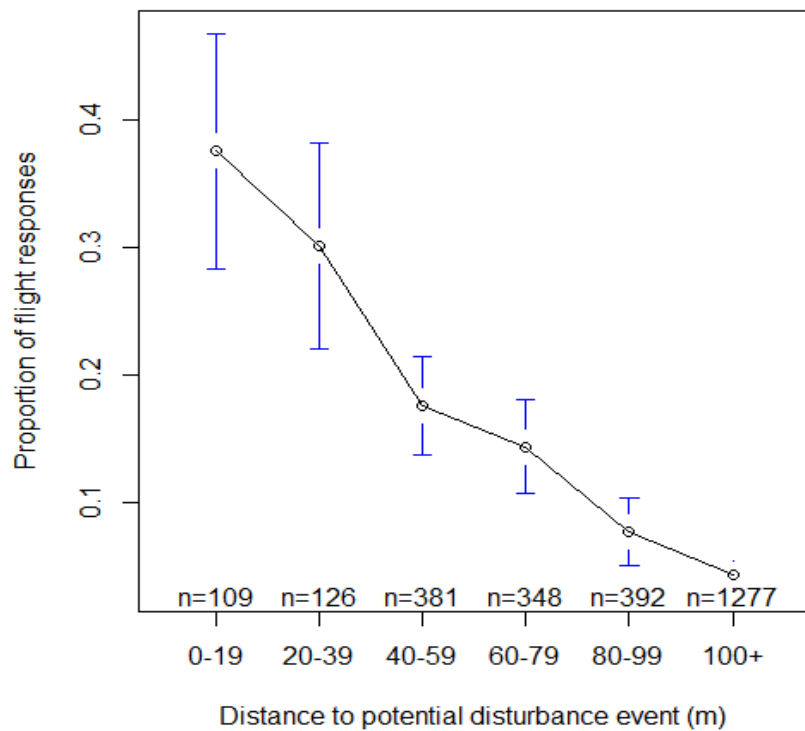


Response by species

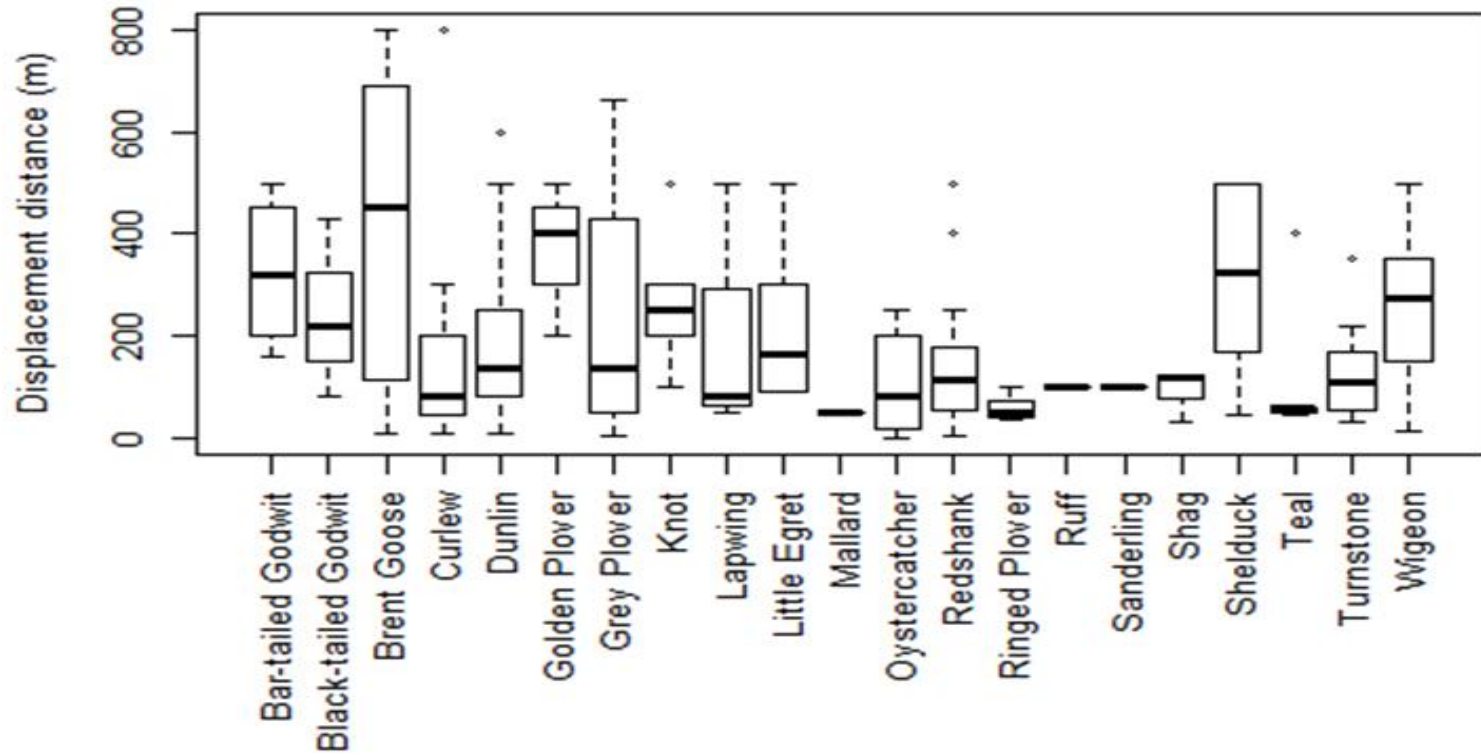


Factors influencing response

Variable	Details
Survey location	Highest probability of flights at S'fleet & Welwick
Month	October < January
Temperature	Few flight responses at temperatures < 0°C. -ve relationship > 0°C
Tide	Low tide < Other tidal phases
Distance to disturbance	-ve relationship with distance
No. of people in group	Non-linear response
Activity type (water-based, foot/bike, other)	Other > Water-based > Foot/bike
Dog(s) present	Significant effect when only Foot/bike activities were considered
No. of dogs off lead	Significant effect when only Foot/bike activities were considered
No. of dogs on lead	No significant effect
Weekend vs weekday	Weekend > weekday
Species	Higher flush rates for mallard, teal, wigeon and lapwing
Sp. group	No significant effect
Flock size	Positive relationship with flock size
Behaviour	No significant effect



Displacement



Limitations

- Variations between sites: Cleethorpes exceptionally busy and difficult to count people accurately
- Some activities missed/underestimated (wildfowlers?)
- Level of survey effort: 14 hours per point; only 10 points. Only 2 months.

Implications for Management

- Dog walkers, with dogs off leads: 45% of all major flights observed (and 35% of access)
- Walking: 12% of all major flights (29% access)
- Birdwatching: 9% of all major flights (5% access)
- Air-borne craft 6% of all major flights (1% of access)

Watersports: no kitesurfing, windsurfing or canoeing recorded.

Careful monitoring recommended



Where open soft mud...

- Low probability of flushing at low tide.
- Where plenty of open soft mud away from shore, little concern relating to disturbance and feeding birds/low tide





Quiet areas important

- **Some evidence that in areas with low levels of access, higher probability of individual disturbance events flushing birds.**
- **At quiet sites birds potentially not distributing to avoid access or access more unpredictable.**
- **Merit in maintaining quiet areas with low levels of access. Not promoting/providing parking etc.**

Dog walking

- Dogs on leads or reducing number of dog walkers per key



Options include awareness raising, dedicated dog-off lead areas, clear signposting, dog control orders.

Pauli



Paull

- Particularly high flush rates and disturbance to roosting birds.
- Redirecting paths, screening, low fencing etc. may be beneficial

Open sandy areas

- Cleethorpes, Humberston Fitties and number of other sites access spreads out onto intertidal
- Difficult to manage.
- Limiting entry points, reducing parking locations, provision of way-marked routes.



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Monitoring

- Access patterns change
- Paddleboarding, night cycling, canoeing, range of watersports.





