REPORT TITLE

Assessment of the probability of wintering bird disturbance from a new Coastal path at The Fleet, Chesil

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Summary

This brief report follows a field visit on 14th May 2015 to walk the route of a proposed new footpath to the East of Chesil Fleet. The purpose of the visit was to assess the likelihood of disturbance to wintering waterfowl on the Fleet and the adjoining fields. The report summarises observations from two recent reports, the first on disturbance to wintering birds on The Fleet from existing path use and the second from casual observations of disturbance to wintering birds on the fields adjoining the new path made by the professional observer during bird counts. There is also a brief summary from the literature of the preferred habitat of feeding Brent geese and some other species and some observations from other studies about human disturbance to Brent geese and the possible effects of this on the birds. At the end of the report there is a table giving an assessment of the possible effects of the use of each path section on birds on The Fleet and adjoining fields.

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1. Introduction

Recent studies on The Fleet

1.1 Chesil and The Fleet are internationally important for nature conservation and are designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Ramsar Wetland of International Importance (Ramsar) site. Over-wintering species of interest, either notified species of the SSSI, qualifying species of the SPA and/or qualifying or species of national importance of the Ramsar, are:

- Mute swan
- Wigeon
- Dark-bellied brent goose
- Dunlin
- Lapwing
- Coot

1.2 The north-eastern shoreline of The Fleet is used by dog walkers, walkers, birdwatchers and others. There are a number of access points and a public footpath which is part of the England Coast Path which runs along the Fleet from its mouth at Ferry Bridge to the south-east to Rodden Hive to the north-west, where it turns inland.

1.3 Two reports, both commissioned by Natural England, have recently been produced on bird numbers and human disturbance at The Fleet, Chesil, Dorset.

1.4 The first of these reported on a project to determine patterns of usage by over-wintering birds on the West Fleet between Langton Hive Point and Shipmoor Point including the meadows between The Swannery and Tiny Coppice (Underhill-Day, Gartshore & Liley 2015).

1.5 This report concluded that that the West Fleet makes a very significant (>60%) contribution to the nationally important numbers of wintering Dark-bellied Brent goose, and a significant (30-59%) contribution to the nationally important numbers of wintering Mute swan and Coot on The Fleet. It also contributes very significantly to the regionally important populations of wintering Barnacle Goose and Teal and significantly to regional populations of wintering Shoveler, Pintail and Shelduck.

1.6 During this study, the observer noted flocks of birds roosting or feeding on a number of fields adjoining and to the east of The Fleet, with flocks of up to 150 Brent geese, 38 Barnacle geese and 200 Lapwing. He noted that these flocks would fly off from the fields when the observer was 100-300m away depending on location and topography. The precise location of flocks within fields was not recorded.

1.7 The second report summarised current levels of access and reported on the impacts of disturbance to wintering waterfowl within that part of The Fleet adjoining a public footpath (Liley, Underhill-Day & Gartshore 2015).

1.8 This second report was based on systematic fieldwork between September-January 2014/15 with three survey points, each visited ten times. The responses of birds on water or shoreline of The Fleet to human activities within 200m were recorded with birds responding by showing increased alertness (e.g. stopping feeding), walking or swimming away or flying away. Altogether, 25% of the birds present showed a response with most responses occurring when people were within 100m of birds but some responses recorded up to a distance of 170m. The probability of a response declined with distance.

1.9 Observations from the first report were made by a very experienced observer but were not based on systematic observations. They concerned disturbance to birds on fields adjoining The Fleet. The second report was based on systematic observation of disturbance to birds on the water or shoreline of The Fleet but not birds on adjoining fields.

1.10 A second difference between the two study areas was that the first study was carried out at the western end of The Fleet where there is no public access and where access levels are very low and the presence of an observer and the route used may not have been a familiar event. The disturbance study was undertaken in areas that receive high levels of public access and where disturbance levels can be high and behaviour patterns might be more predictable. It is not known to what extent birds in the high disturbance areas have become used to high levels of disturbance and whether or how this might have affected their response.

Other studies

Waterfowl on farmland

1.11 A number of studies have noted the presence of Brent geese feeding on farmland. Historically most Brent geese feeding was on seagrass (*Zostera ssp*) and the green marine alga E*nteromorpha* or on saltmarsh plants. However, There has been a widespread decline in seagrasses (Clausen *et al.* 2012) across Europe and this been mirrored at The Fleet where eelgrasses have also declined in recent years (Carpenter pers. com). In the early 1970s Brent geese began to utilise agricultural land (Charman & Macey 1978) and since that time Brent geese have been recorded grazing on winter wheat and winter barley, oil seed rape, grass fields and amenity grasslands(Williams & Forbes, 1980; Summers & Critchley 1990; Wicks 2002; Ward 2004).

1.12 On grasslands Dark-bellied Brent geese prefer shorter swards (<6cm) which have been treated with organic or inorganic fertiliser and have been grazed by sheep rather than cattle or have been cut (Williams & Forbes, 1980; Vickery, Sutherland & Lane 1994; Hassall, Riddington & Helden 2001). Brent geese may also choose fields to graze on the basis of colour as darker green indicates a higher percentage of live grasses or nitrogen in the sward and pale green indicates a lower percentage of live grasses or nitrogen (Summers & Critchley 1990). Barnacle geese also prefer to feed on reseeded pasture and on pasture which had been fertilised in the autumn (Percival 1993). Wigeon also prefer shorter, more nutritious swards (Hassall, Riddington & Helden 2001).

1.13 Grass fields chosen by Brent geese also tend to have only low hedges, be close to the sea, be relatively unimproved and to have no road or path on the boundary, and can be grazed by livestock although in one study Brent geese avoided sheep (McKay *et al.* 1996).

1.14 Lapwing also prefer grass to tilled fields, with large fields with old , tussocky pastures with freshwater pools the most favoured (Shrubb 1988; Mason & Macdonald 1999).

Possible effects of disturbance

1.15 Brent geese are small herbivorous geese with limited digestive capabilities that feed on generally nutrient poor vegetation which is difficult to digest (Denny *et al.* 2004). They therefore have relatively poor energy assimilation, have high rates of food consumption and are further constrained by short day length (as they are mainly day-time feeders (Lane & Hassall 1996; Riddington *et al.* 1996), and susceptibility to adverse weather and a seasonal decline in the quality of the available forage. They therefore need to feed for a large proportion of the day to satisfy their energy requirements (Riddington *et al.* 1996).

1.16 Disturbance will not only reduce the available feeding time (thus reducing energy intake) but may also lead to flight, resulting in additional energy expenditure. In one study (Riddington *et al.* 1996) it was concluded that Brent geese feed at or close to their maximum possible rate throughout the day through the winter, so that disturbance could result in an energy imbalance that could only be made up by night-time feeding or moving to less disturbed areas. Night time feeding studies have been carried out on saltmarshes where the birds are close to their roost, where they can swim between feeding sites depending on the state of the tide and where, if the creeks are water-filled or the saltmarshes covered in water, the risk of predation by foxes is likely to be least (Lane & Hassall 1996). The alternative is weight loss, potentially leading to reduced breeding performance the following spring (Owens 1977).

1.17 A number of studies have also concluded that larger flocks of birds are warier and more easily disturbed than smaller flocks because there is a greater chance of larger flock containing “jumpy” individuals which are liable to startle the rest of the flock (Owens 1977; Madsen 1985; Riddington *et al.* 1996). Owens (1977) also concluded that geese had become used to the proximity of people by late winter, whereas Riddington et al (1996) could find no evidence that geese got used to disturbance.

1.18 A number of studies have found that birds can be disturbed by aircraft, traffic and bird-scarers, but we could find no evidence that human voices or dogs barking would particularly cause disturbance to grazing or roosting wildfowl or waders.

1.19 Owens (1977) also noted that at the beginning of winter Brent geese were put to flight by a higher proportion of people approaching to within 50->200m than in late winter and that they were more easily disturbed on fields behind the sea wall than on the saltings. Riddington et. al (1996) found no evidence that Brent geese habituated to disturbance.

2. New footpath proposals at West Fleet

Background

2.1 It is clear from the brief summary above that disturbance from a new visitor route at West Fleet could be damaging to wintering geese either feeding in The Fleet or in the adjacent fields. Visitor levels and patterns on a new path are difficult to predict but are likely to be less intense than those on the existing paths at the eastern end of the Fleet as the main settlements are at that end and levels of access were regular during October-January (Liley, Underhill-Day & Gartshore 2015). By contrast at the western end, visitor use in winter is likely to be sporadic and mainly from long distance walkers and local walkers from a more sparsely populated area. In the disturbance study (Liley, Underhill-Day & Gartshore 2015) birds continued to react to disturbance up to 170m away while the maximum distance observed for disturbance of birds (when they flew away) on the fields was 300m (Underhill-Day, Gartshore & Liley 2015). It is possible that geese on the fields showed a response at distances above 300m such as greater alertness, stopping feeding etc. but the count observer only recorded when the birds flew.

2.2 In order to assess the new footpath proposals we assumed that birds on fields within 300m of the path might be vulnerable to disturbance. Because the location of the birds on fields was not recorded, in estimating distances from the path we have measured distances from the path to the field centre line. The maximum distance at which disturbance was observed to birds on the water in the disturbance study was 170m and this distance has been taken, measured from the shoreline (as birds can often be found by the shore in the shallow water at the edge of The Fleet) as the point at which disturbance could occur to birds on the water.

2.3 In assessing the likelihood of fields being used by feeding or roosting waders and waterfowl, the following information and features have been taken into account:

- Observations of field use by the bird count observer
- Anecdotal evidence of field use by the local warden
- Size, topography and boundaries of fields
- Distance to proposed path from shoreline or from centre-line of fields measured from east to west (as no information was available on the location of birds within the fields, which in any case may change from time to time)
- Type of grass sward, whether short, tall, tussocky and whether bright green or pale green (indicative of nutritional value)

2.4 All observations are based on a single visit to assess the path route and the possible effect on birds on The Fleet or in the fields. Therefore the assessment can only consider the conditions at the time of the visit. It should be borne in mind that the state of the fields could change over time making them more or less suitable for grazing or roosting waterfowl.

3. Route Assessment

3.1 Each length of the proposed path has been identified by letters and the adjoining fields between the proposed path and The Fleet identified by numbers on the attached Map 1. The main features of the path routes and fields are described in Table 1 together with an assessment of the likelihood of the fields being used by waders and wildfowl , the probability of disturbance based on distance, topography and screening and the need for and effectiveness of mitigation.

3.2 No information is currently available on recent field management such as re-seeding, fertiliser use, grazing patterns or stock type. Current field condition for feeding geese and wigeon has been roughly assessed based on colour and topography. Distances to field centres and the Fleet Shoreline are approximate.

3.3 Any planted screening would need to be either evergreen or wide and thick enough to provide an effective screen in winter when the leaves have fallen. Proximity to the coast will also mean that any planted screen will need to consist of species which are resistant to salt-laden winds. It would be expected that establishment and growth will be slow particularly on the more exposed locations. As existing hedges were in full leaf at the time of the visit it is not possible to say whether they offer an adequate screen in winter when the leaves have fallen. Gaps in fences for gates or horse jumps, if not screened could result in disturbance as people suddenly appear in the gap. In a similar situation, where there was a gap in the reeds screening the public path at Butterstreet Cove disturbance was noted as walkers passed the gap (Liley, Underhill-Day & Gartshore 2015).

3.4 Studies have shown that grazing Brent geese tend to avoid hedges (McKay *et al.* 1996), so the planting of new hedges may screen walkers but could also reduce the usable areas of fields as the birds avoid areas in the vicinity of the new hedges.

3.5 If regular disturbance were to occur, then the birds might stop using some fields or parts of field completely, but without data on field use collected over some time on all the fields the birds might use, prior to, and following the creation of the new path, such an eventuality would be difficult to measure.

3.6 It is assumed that along the whole route there would be dog proof fencing and gates to prevent uncontrolled dogs from running down to the shoreline and signage and locked gates deterring walkers from doing the same.

Table 1. Numbered path lengths and adjoining fields lettered (Map 1) with field features and an assessment of likely use by wildfowl and waders, together with the probability of disturbance and the need for and effectiveness of mitigation.

Numbered path	Field letter	Field features	Disturbance and mitigation
A-B	1	A medium sized (12.64 ha) flat field bounded by hedges with woodland (Tiny Coppice) immediately to the East. The grassland appears to be improved (perhaps more recently at the southern end) and was being grazed by sheep at the time of my visit. The enclosed nature of the field and its modest size make it less attractive to geese but the nearness of the Fleet shallows and adjoining wet habitats suggest that this field could attract grazing wigeon and roosting waders.	The presence of a footpath along the eastern edge of this field is likely to result in disturbance to any waders or wildfowl using the field which at its widest point is about 133m to the centre of the field from the footpath narrowing to 85m. Mitigation would be needed by screening the path on the field-side by hedging or woodland with scrub.
B-C-D	2	The adjoining field is extremely large (41.05 ha) but where it adjoins the footpath here it consist of a steep north-west/south-east ridge sloping steeply down to the path, with a very limited area of more level ground near the path. Much of the field on the steep slope appears to be unimproved grassland. The field is bounded by a hedge between points B-C. At the time of my visit it was grazed by sheep. The enclosed nature of the field, the unimproved nature of the sward and the enclosing hedge combine to make that part of the field adjoining the path here unsuitable for grazing or roosting waders and wildfowl	It seems unlikely that the proposed path route will cause any disturbance as the adjoining fields seem unsuitable for feeding or roosting wildfowl or waders. No mitigation is therefore required.
D-E-F-G-H	2	The path here runs on the seaward side of the ridge and then descends at the far end of field B and turns the corner to go through Berry Coppice. At point D the path is 290m from the shoreline of The Fleet and at the point where it enters Berry Coppice it is 200m away. The field appears to be largely unimproved and slopes steeply down to the shoreline of The Fleet. At the southern end the topography effectively shuts off views of the Fleet from the path	From point D the path runs parallel to and far enough from the edge of The Fleet to pose little risk of disturbance. As it rounds the corner at point E, it descends steeply and is soon out of sight of The Fleet. With the field presently unsuitable for wildfowl and waders and the path far enough from The Fleet to avoid disturbance or out of sight of the water, no disturbance is anticipated from the proposed route and therefore no mitigation is needed.

		between points F-G. In its present condition this field seems unsuitable for feeding wildfowl and roosting waders.	
H-I-J	3	As it emerges from Berry Coppice at point H the path is, for a short distance in full view of a bay on the inland edge of The Fleet which offers sheltered conditions for roosting wildfowl when the wind is blowing from the north-west. At this point the path is less than 140m from the shoreline. The adjoining field No 3 (8.74 ha) slopes steeply down at this point towards the Coppice and here it is unlikely to be attractive to wildfowl or waders. The path then continues to point I where it overlooks the field and is about 130m from the shoreline although at this point there is a line of scrub obscuring the closest area of water. The path then continues to the crest of the ridge at point J and for most of its length is in full view of field 3. The distance to the centre of field 3 is about 100m. Field 3 appears to be improved grassland, has an area of fairly flat and open grassland. It has been used by grazing wildfowl in the past (D. Moxon pers. comm.).	Between points H and J with the exception of part of H-I and close to point J use of the path could cause disturbance to birds on The Fleet or on field 3. A planted screen would be required to mitigate this, but would need to include screening to the horse Jumps closest to Point H.
J-K	4	Between points j-K the path is well screened from field 4 (8.78 ha) by a hedge and the topography of the field which slopes down to The Fleet. The field itself has possibly been improved in the past but appears not to have seen any recent improvement. At the time of my visit it was being grazed by cattle.	There is no risk of disturbance to field 4 from use of the proposed path route and therefore no mitigation is required.
K-L-M	4	From the farm buildings at K the path turns towards The Fleet and follows the farm track before turning south through a belt of scrub to point M. There is a small flat plateau area within field 4 that could be suitable for grazing wildfowl (although there is no record of it being used by the birds) and would be disturbed by pedestrians using the track about 100m away. At the point where the	Pedestrians using the track between points K-L are far enough from The Fleet to make disturbance unlikely. Unless further information suggests that wildfowl use the plateau on field 4 for grazing, the risk here seems small as existing use of the track already disturbs this area. On balance therefore this stretch of proposed path seems unlikely to result in disturbance and no mitigation is necessary.

		path turns south off the farm track it is about 230m from The Fleet shoreline.	
M-N	5	The path here climbs up from the edge of the scrub belt to the western edge of South Sleight Coppice. On this short climb it is in view of a small corner of field 5 (10.84 ha) and The Fleet. However it is unlikely that wildfowl or waders will use the field edge close to the existing scrub edge and track and the path is some 240m from The Fleet shoreline. Along the Coppice on the seaward side the path is completely shielded from the field and The Fleet by the topography of the field which slopes up to a ridge.	It is not expected that the use of this length of path will result in any disturbance to field 5 or The Fleet and no mitigation is required.
N-O	5	The path here climbs up to the top of the ridge and then descends to point O where there is a gate into field 6.Field 5 appears to be improved pasture and on the seaward side of the ridge appears suitable for grazing wildfowl and roosting waders. It has been used by grazing wildfowl in the recent past (D. Moxon pers. comm.). At point O the path is some 200m from the field centre.	As the path climbs from point M it commands a greater and greater view of field 5 and would disturb any waders or wildfowl using that part of the field in view. It would be necessary to plant a screen on the western edge of the path to screen field 5.
0-P-Q	6	From the gate at point O the path overlooks field 6 to point P after which most of the route is screened by a thick hedge to point Q, although there are a number of gaps. There are also a number of gates and horse jumps between points O-P which would need some form of screening. Field 6 (24.21 ha) appears to be mostly improved grassland with large flat areas, It is used by grazing geese and roosting lapwings, The field centre is some 125m from the path which is between 250-300m from The Fleet shoreline.	Use of the path adjoining field 6 would cause disturbance to feeding and roosting wildfowl and waders on the field. An effective screen would need to be planted including some form of screening across the gaps created by gates and horse jumps. Although the distance to the Fleet shoreline is about 250m here, there is a small risk of disturbance to birds at the exit to the Rodden stream as large numbers of birds congregate here, at the best freshwater inlet on The Fleet to drink and bathe. The importance of this location, the route of the path well above the Fleet here and the greater likelihood of disturbance having an effect on larger groups of birds all reinforces the need for an adequate screen along the path adjoining field 6
Q-R	7	Field 7 is a small (3.74ha) apparently improved grass field with hedges on two sides and with the Rodden stream to the north. Where it abuts the Fleet there is a small	The path is completely screened from field 6 and field 7 is unlikely to hold any waders or wildfowl. There is therefore no risk of disturbance and no mitigation is required although notices asking

		reedbed. The field is unlikely to be used by waders or wildfowl as it is small and enclosed. The path crosses field 7 to the bridge over the Rodden stream	people to stay on the path and a fence to deter dogs from wandering towards the Rodden Stream outlet into the Fleet should be provided.

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Map 1. The location of numbered fields which lie between the proposed route and West Fleet. Letters refer to specific comments noted within text.

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