Pied Wagtails of Poole Harbour - a winter roost survey (2014/15)

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Contents

1. Introduction

Pied Wagtails are now one of our more familiar urban birds, being one of a number of species to embrace urbanisation.

Many of Poole Harbour's Pied Wagtails are resident and some will use communal roost sites all year round, however it is for the large winter roosts that they are most well known, often being located at well-illuminated conspicuous urban sites.

Pied Wagtails are known to use a wide variety of roosting sites. Reedbeds are a favourite, particularly during the autumn. These are however largely abandoned in the winter as birds gravitate to more urban type roost sites. These also occur at a variety of sites, however many are commonly found in a sheltered stand of small trees, particularly those in supermarket or municipal building car parks.

Numbers are also swelled by migrant birds from more northerly populations that have moved south for the winter.

Although surprisingly inconspicuous once inside the roost, it is the pre-roost gathering activities that attract the attention, with large often noisy pre-roost flocks regularly performing low level 'mass flights' around supermarket car parks for example, before entering the roost trees.

During this survey it was also found that prior to pre-roost gathering, many birds had already gathered into flocks some distance away, at large open grass areas. The main activity was still feeding, but later in the afternoon included preening and mass flighting.

2. Objectives

To locate wintering roost sites and determine numbers. Where possible to determine roost catchment areas and gain insights into the behaviour and routines of Pied Wagtails within the harbour.

3. Methods

3.1 Location of roosts

Investigations into previous or known sites within the harbour provided three roost sites.

From then, the method involved a series of afternoon vantage point watches to locate feeding flocks and observe commuting birds.
All flightlines of moving birds were plotted. Nearly all initial observations ended with birds flying out of sight. Here, estimates of the last known positions were made, providing the next vantage point position from where observations could resume on the following visit.

From here flightlines were again plotted and the process was repeated until the roost site was located.

The whole process could involve many visits before the roost site was eventually located, particularly in built up areas where viewing could be very restricted.

Not all birds left feeding areas in the same direction. As the survey progressed and more roosting sites were located, the destinations of subsequently observed flightlines could be anticipated which speeded up the process.

3.2 Counts

Passerine roost counts are undertaken during the evening by most bird watchers. Communal roosting birds are often at their most conspicuous at this time of the day, and it's a nice time to be out counting.

It was found during this survey that early morning counts of birds leaving the roost were more accurate. Late afternoon pre-roost gatherings could often be quite chaotic with large flocks of birds swirling and jinking about the area. In addition not all birds participated, with many often standing out of sight on flat roof tops for example. Entry to the roost could also be chaotic with some birds diving straight in, others aborting at the last minute and others coming back out again.

In contrast, the morning departure was a much more considered and disciplined affair, often involving regular small groups of birds leaving at various intervals over a much more protracted time period.

3.3 Timing

Field observations commenced in October. Although findings during the first number of weeks wouldn't form part of the main report it was anticipated that data would be valuable and that many feeding areas and roost sites located would remain active during the core winter months.

To determine the start date of the winter roost survey, close attention was paid to local migration watchpoints, in particular South Haven and Durlston. The last recorded movements of birds at these sites would give a good indication as to when the last migrants had left Poole Harbour.
Good numbers of *alba* wagtails were moving through these sites up until the end of October. Numbers tailed off from the second week of November with the last handful of birds at Durlston on 20th. It was therefore decided that 1st December would be the start date.
With spring wagtail movements known to commence in March, the survey would finish at the end of February.

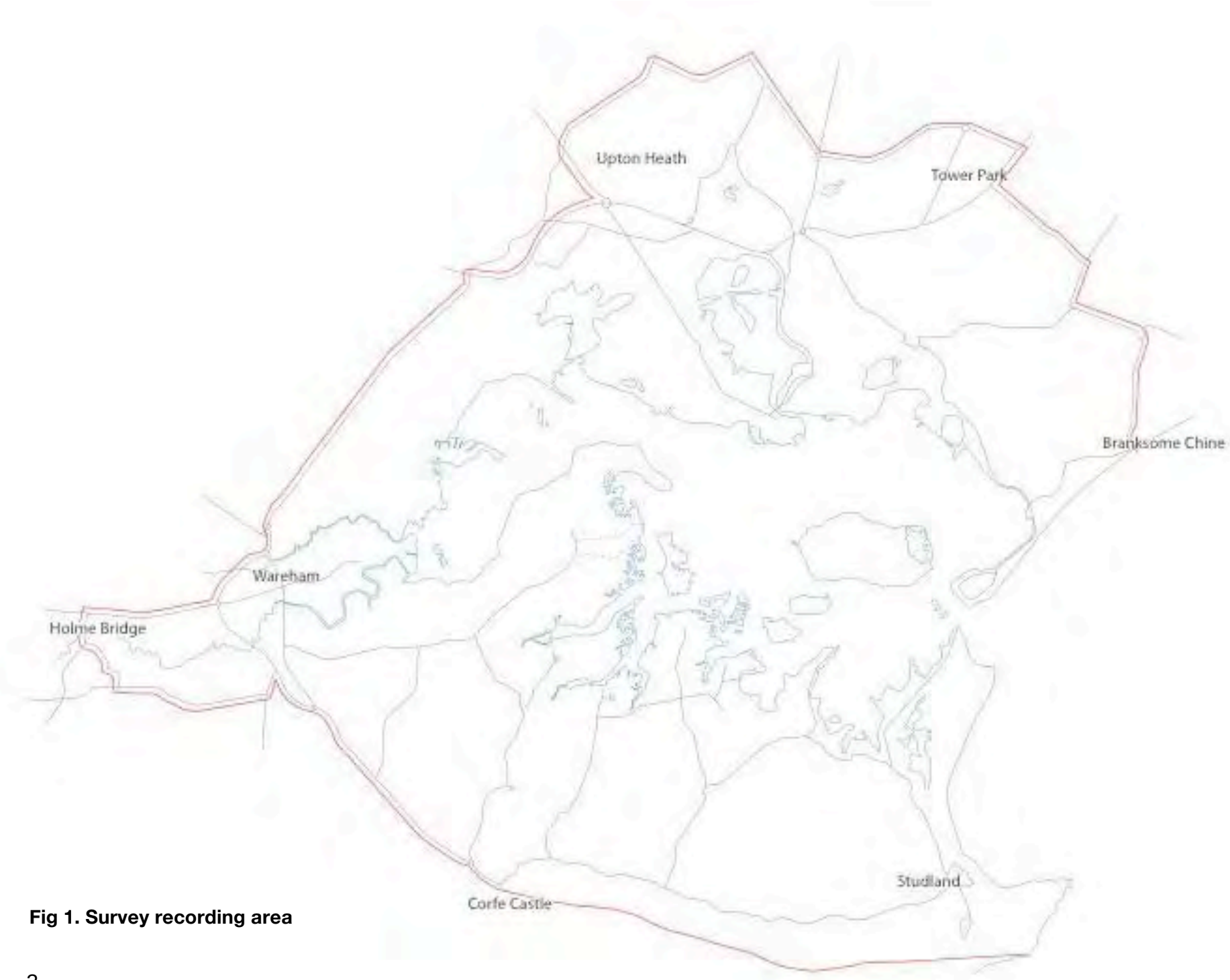

Fig 1. Survey recording area

4. Results

4.1 Roost sites

12 winter communal roosts were located that were occupied in at least one of the three core winter months of December January and February.

All except three roosts were occupied during all three months. The three that were not were all reedbed roosts.

As expected, urban sites in the northern half of the recording area dominated during the core winter months. Rather unexpectedly however despite low feeding numbers in the southern half, the largest roost by some distance was at Wytch Farm gathering station with over 400 birds.

A few reedbed roosts were still occupied during some of the core winter months, but numbers of birds were small.

Roost sites are listed in order of maximum count.

Catchment areas are also discussed for each site, although the data is by no means complete and only limited to areas within the Poole Harbour recording area.

Occupancy times include findings in October and November for completeness. Months occupied only concern the period of the fieldwork. It is known that many sites can be occupied almost throughout the whole year, although in much reduced numbers.

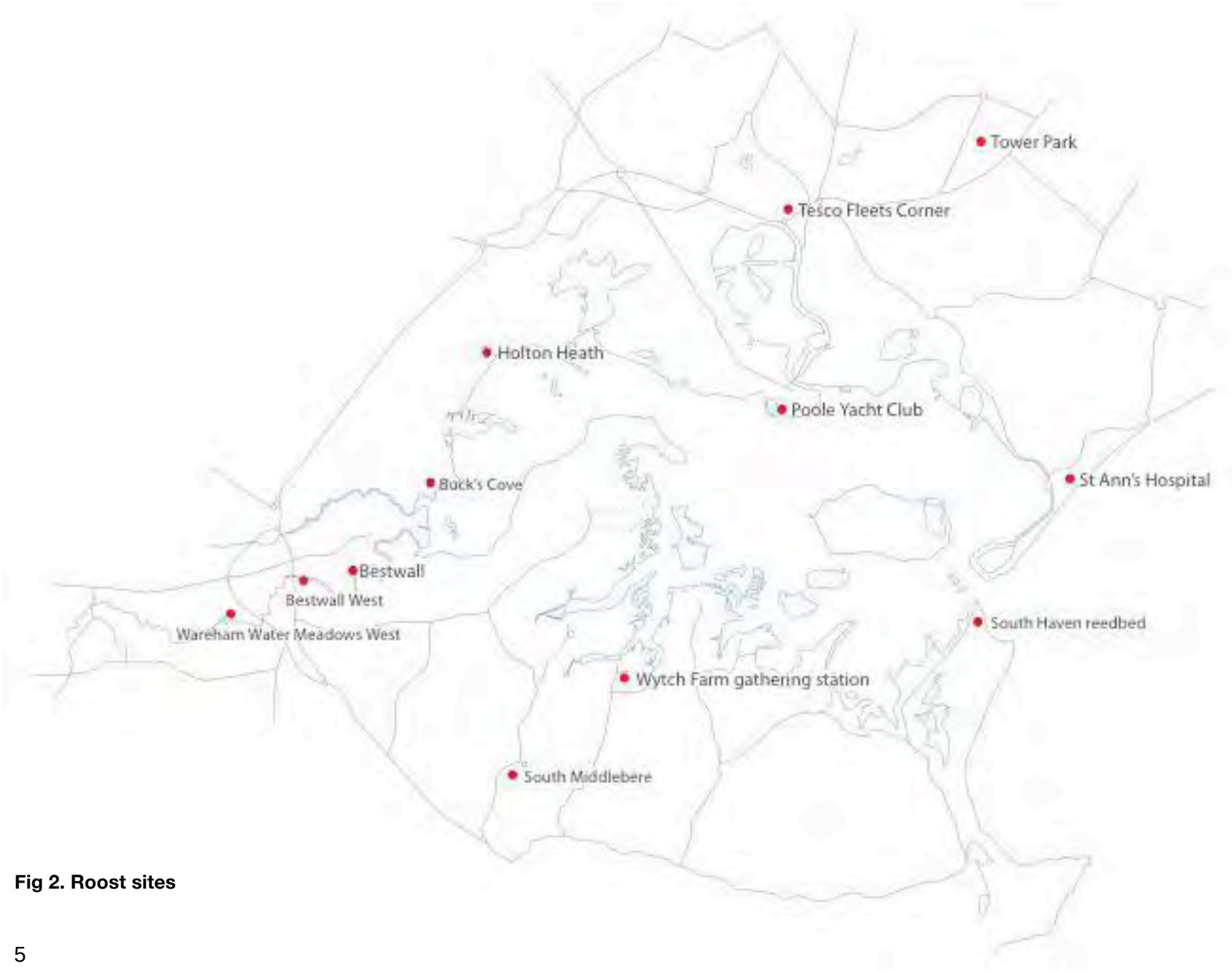

Fig 2. Roost sites

1. Wytch Farm gathering station

Location: Pipework complex at oil gathering station, Wytch Farm.

Occupancy: Oct - Feb

Counts:

17th Dec	c400
13th Jan	416

Observed catchment area

This site is clearly very attractive to roosting wagtails, being protected on all sides by conifer plantation, and centrally heated by oil pipes. Of the 400 or so birds roosting here, afternoon observations revealed that only a handful of birds arrived from the north, east and west.

Morning counts at the site saw 95% of birds leave on a south south west heading, but apart from the hundred or so birds at fields at Thrasher's Lane, none of the others could be accounted for within the harbour so were presumably spending the day beyond the recording area.

Pre-roost gathering

Small parties sometimes gathered in adjacent fields, most often to preen with occasional feeding. Often just standing completely motionless. However, most birds assembled at the western end of the gathering station.
Pre-roost 'mass' flights were a constant feature .

Fig 3. Position of Wytch Farm gathering station roost

2. Tesco Fleets Corner

Location: Initially in small deciduous trees at northern end of supermarket car park, switching to neighbouring small conifers in core winter months. All trees only a few feet from passers by

Occupancy: From at least early Nov until Feb.

Counts:

10th Nov	24
23rd Dec	11
12th Feb	c270
13th Feb	278

Observed catchment area

From the west, birds seen heading here from beyond Corfe Mullen tip.
Birds arrived from Turlin Moor Recreation Ground in February only.

Pre-roost gathering

Main gathering area prior to roost entry was the east facing roof of the main building. From here it was a short drop to the trees.
Main activities were standing still, with occasional preening. During the large influx of birds in February, mass flights became a feature.
Car park also used as a general feeding area but rather oddly some birds feeding here late afternoon chose not to roost here and flew south.

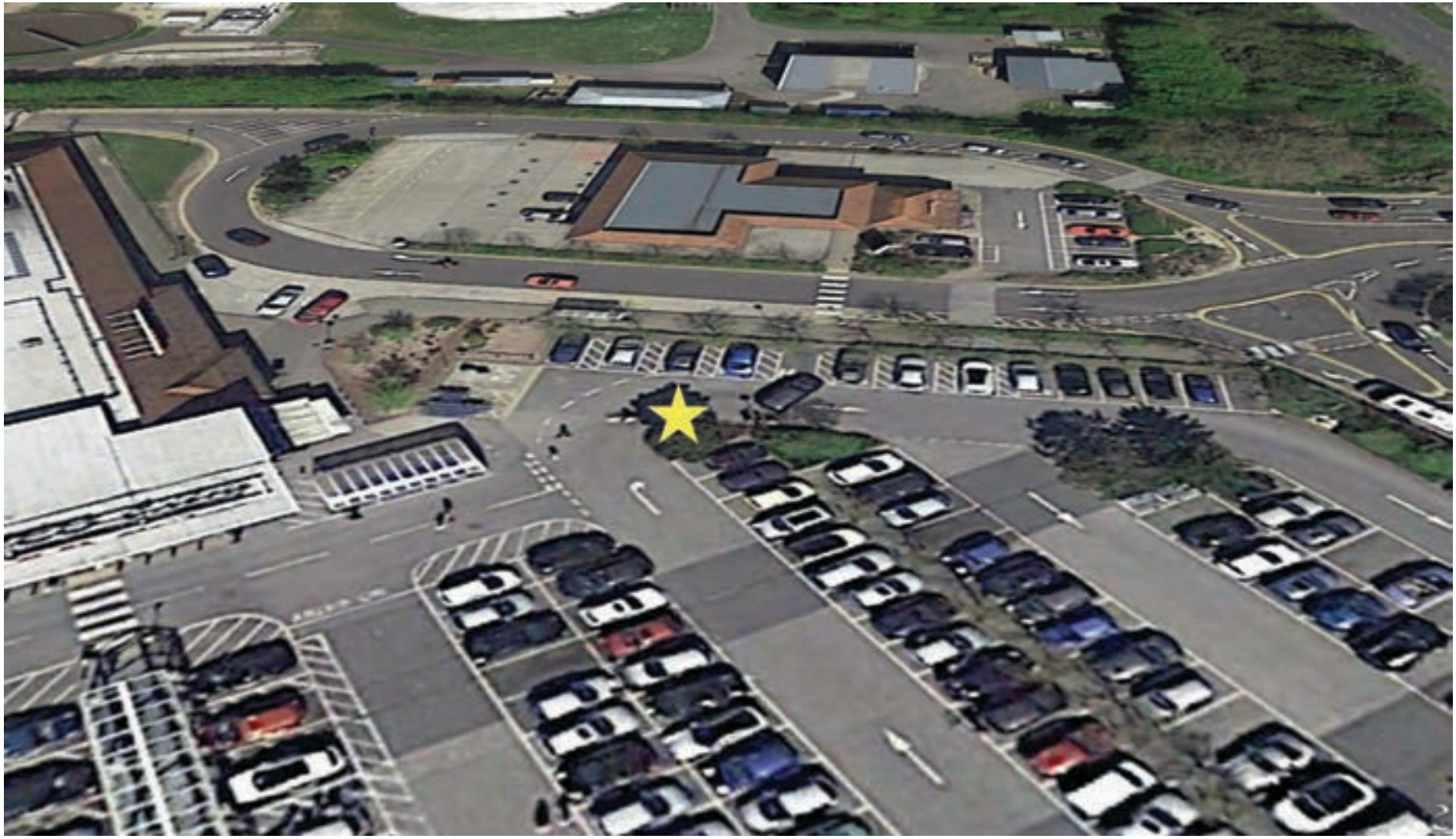

Fig 4. Position of Tesco Fleets Corner roost

3. Tower Park

Location: Initially in small deciduous trees in southern car park, later relocating to small trees directly outside Tesco in north car park.

Occupancy: Oct to Feb

Counts:

12th Nov	c260
22nd Jan	c270
26th Jan	c270
13th Feb	22

Observed catchment area
Largely unknown due to viewing difficulties.
Some birds observed arriving from the east.
Most birds leaving the roost headed off north west and west.

Pre-roost gathering
The nominated pre-roost roof was the Bowlplex. Regular mass flighting was initiated from here, usually involving circuits around the car park.

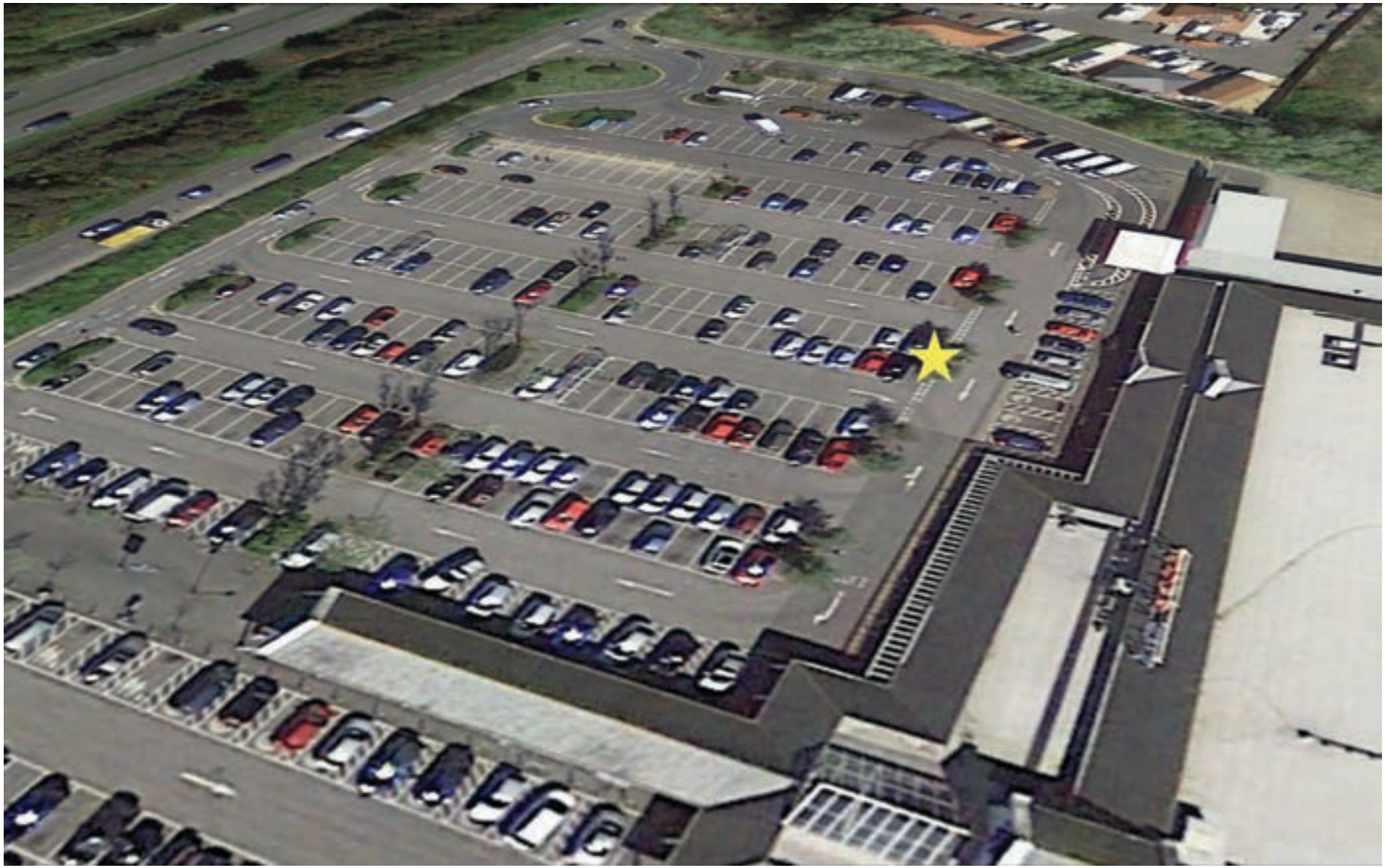

Fig 5. Position of Tower Park roost

4. Poole Yacht Club

Location: Birds roosted amongst the moored boats within the confines of the walled marina.

Occupancy: Nov to Feb at least

Counts:
20th Dec 94
26th Feb 90

Observed catchment area
The majority of birds roosting here arrived from Turlin Moor Recreation Ground. In turn, birds arrived at Turlin from the west, north west and Upton Country Park.
A few birds were observed heading east from Otter Island at the southern end of Lytchett Bay and Rockley, with subsequent flightlines followed here.
A handful of birds also arrived from Baiter Recreation Ground.

Pre-roost gathering
In December many birds gathered on the roof at Hamworthy Park Junior School. Main activities were preening and standing still.
From here it was a short flight to the marina.

From January, the school was by-passed and all birds entered the marina directly. Some of the early arrivals loafed for a short period on the breakwater wall before moving to the moored boats. Later arriving birds went straight to the moored boats.

Not all birds that arrived from the west dropped into the roost. A few carried on straight over with some even dropping down as if to land only to rise up again and carry on. On one occasion a group of five birds arrived, all dropped toward the marina before four of them rose back up to carry on east as the fifth bird dropped in.

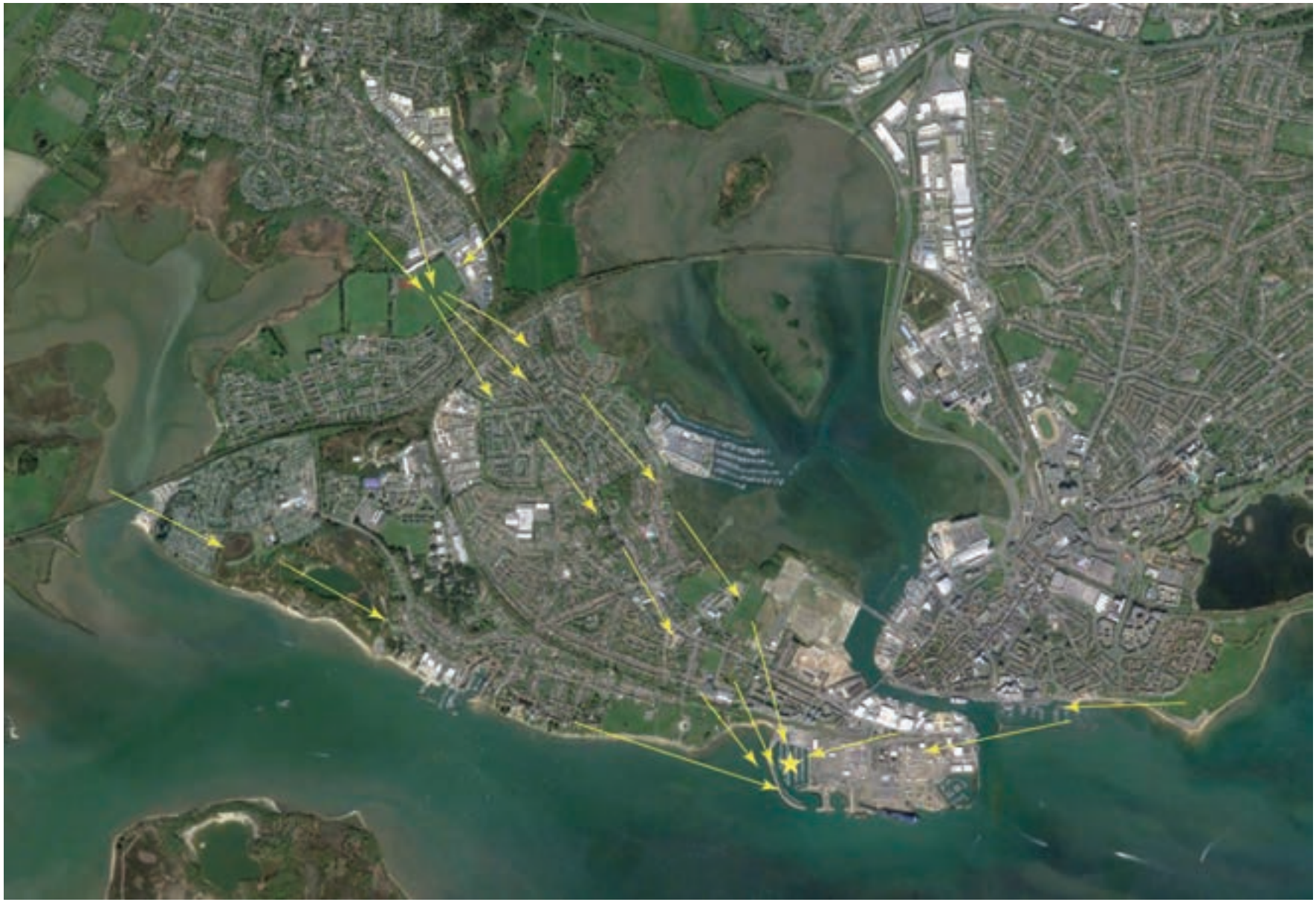

Fig 6. Flightlines associated with Poole Yacht Club roost

5. St Ann's Hospital

Location: Trees within the sheltered quadrangle formed from four walls of the building

Occupancy: Oct to Feb

Counts
Exact numbers difficult to assess due to viewing difficulties, however regular observations of birds entering and leaving the site suggested regular numbers in the 90's.

Observed catchment area
Although a large proportion of birds came from Baiter Recreation Ground, the observed catchment area was quite far-ranging. Birds also arrived from the south with the furthest observed birds coming from Studland. Birds that were observed overflying Poole Yacht Club were presumed to also be roosting here.
It also seems that a handful of birds came from Turlin Moor Recreation Ground, with observed flightlines very strongly suggestive of this.

Pre-roost gathering
All birds observed arriving either landed on the roof areas or dropped straight into the quadrangle.

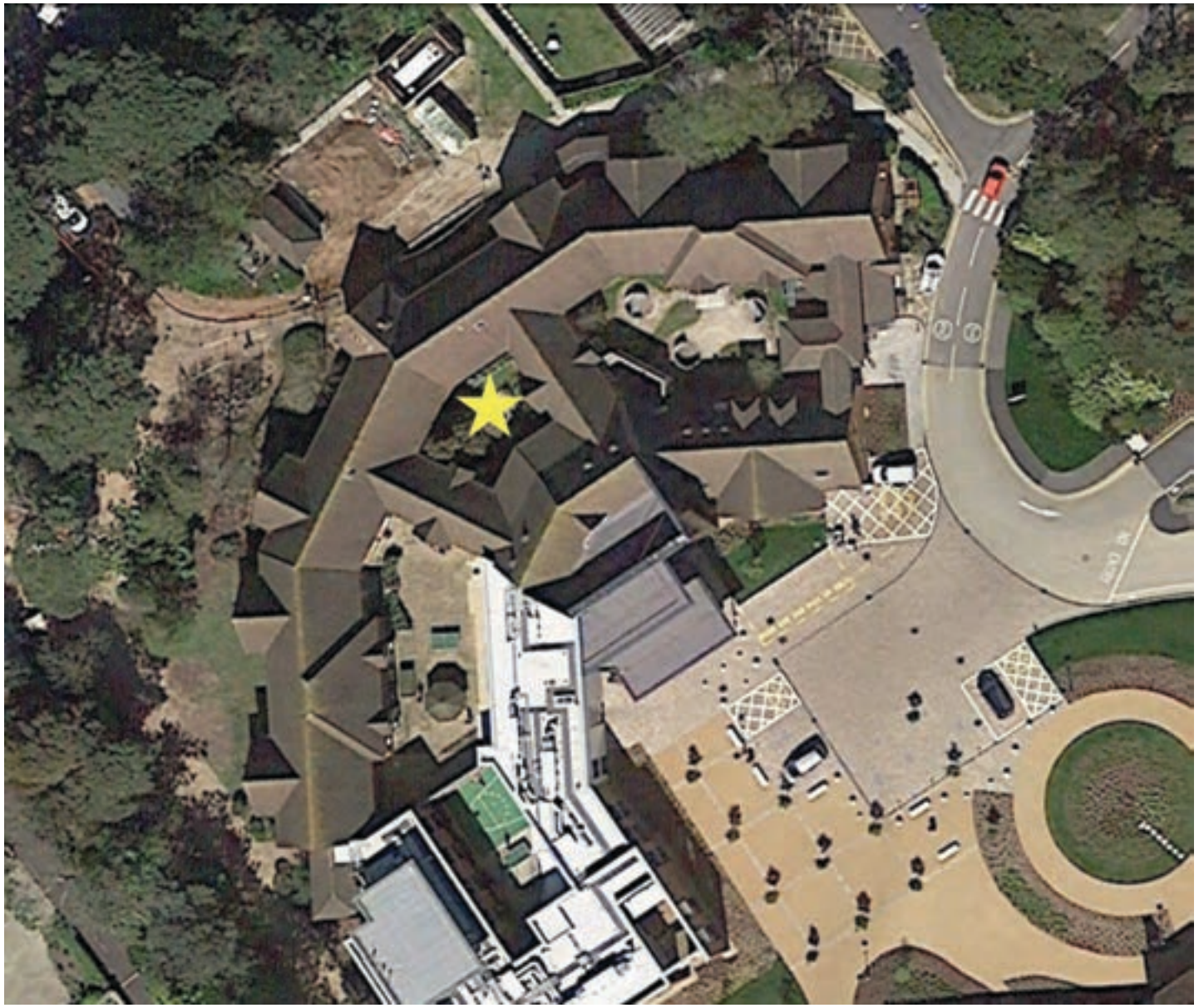

Fig 7. Position of St Ann's Hospital roost

Fig 8. Flightlines associated with St Ann's roost

6. Bestwall

Location: Isolated reedbed in middle of Bestwall

Occupancy: Oct Nov and Dec only

Counts:
10th Dec 43

Observed catchment area
Birds mainly noted entering roost from nearby feeding areas including Keysworth, a few also arrived from further up the Frome Valley.

Pre-roost gathering
None observed. Main flock feeding in surrounding water meadows flew very short distance and dropped en-mass into reedbed.
Other birds that arrived later from further afield also dropped straight in.

Fig 9. Position of Bestwall roost

7. Holton Heath

Location: Not certain. Presumably reedbed area directly east of Holton Heath Trading Park.
Access was not possible to confirm.

Occupancy: Nov and early Dec. Possibly throughout rest of winter

Counts:
27th Nov 30 birds were counted pre-roosting on factory roof before flying off east

Observed catchment area
Again data a bit sparse. All observed flightlines noted were from the south only. Vantage point watches to the north at Holton Lee revealed no birds arriving from the north.

Pre-roost gathering
Birds gathered on a particular factory roof at the eastern edge of the Trading Park. From here a number of mass flights were observed. Circuits were limited to an area in the immediate vicinity of the roof.

8. Buck's Cove Keysworth

Location: Reedbed

Occupancy: Jan and Feb at least

Counts:
7th Feb 17

Observed catchment area
Certainly areas of the Piddle and Frome Valley

Pre-roost gathering
None observed. All birds arriving immediately dropped into the reedbed.
On more than one occasion, arriving birds overflew the roost to carry on north. On one particular occasion, 18 birds arrived and only 8 dropped in, the remaining birds carrying on north.

9. South Middlebere

Location: Reedbed

Occupancy: Oct - early Jan

Counts:
28th Oct 41
8th Jan 11

Observed catchment area
Birds seen arriving from Middlebere to the north and New Mills Heath from the south west. The destinations of birds beyond these areas were difficult to assess due to the relative close proximity of the Wytch Farm gathering station roost.

Pre-roost gathering
During October, birds gathered at an area of unimproved grassland adjacent to the reedbed. Much of the time however, was spent flying around in flocks. Telegraph wires were also used nearer to roosting, with a few birds dropping in from here. Not all birds that engaged in mass flights here used this roost, and of these, not all left in the same direction.

Numbers were much lower from December. During this time no pre-roost gathering was noted with birds entering the reeds directly on arrival.

Fig 10. Position of South Middlebere roost

10. Wareham Water Meadows, Bestwall west

Location: This site was unusual with three distinct roost places within the reedbed area.

Occupancy: Jan at least
Counts:
7th Jan 9 (3, 2 and 4)

Pre-roost gathering
Observations were limited to January. During this time birds either fed until last light before flying directly into the roost or arrived from farther afield often in virtual darkness to enter the roost.

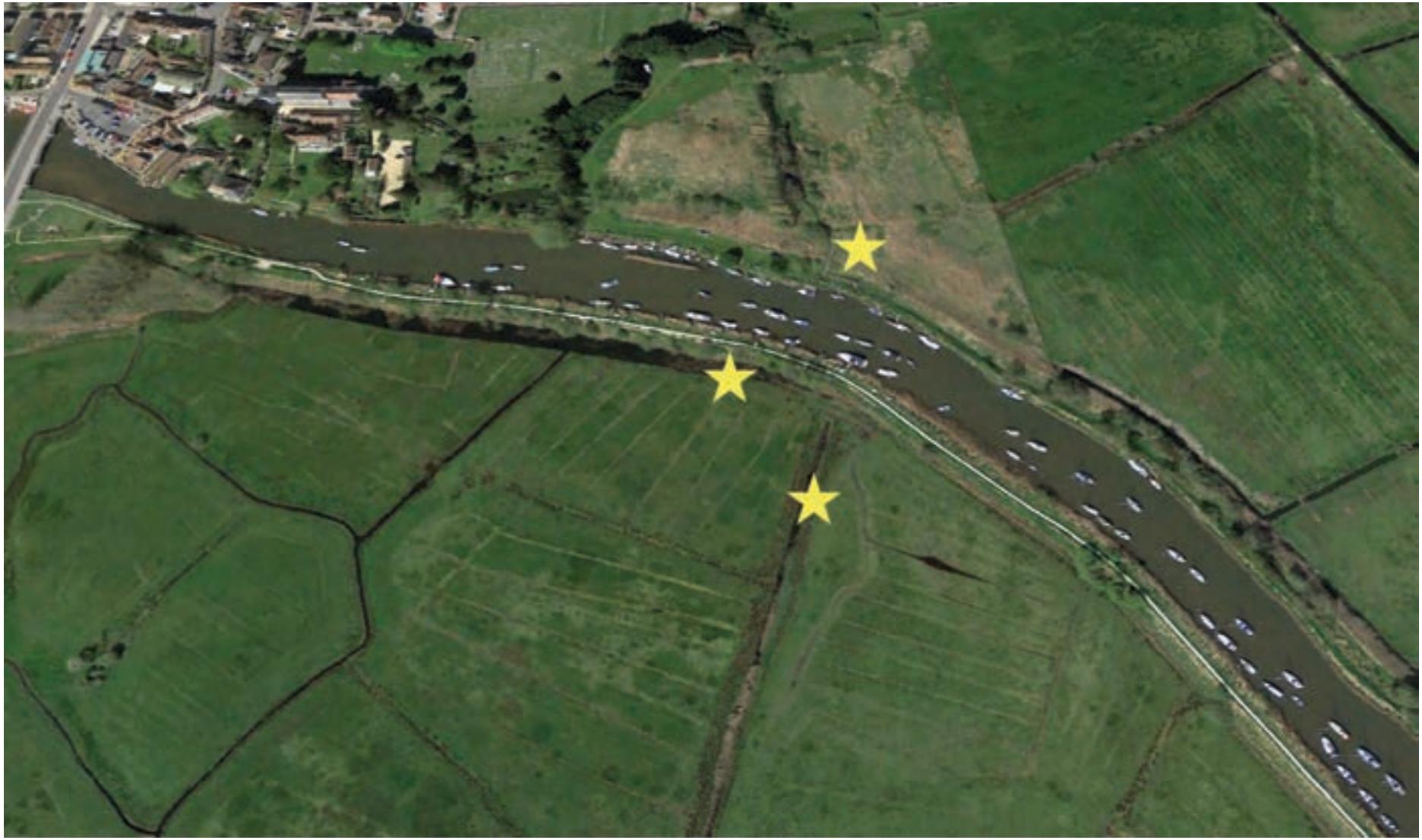

Fig 11. Positions of Bestwall west roost

11. South Haven reedbed

Location: Main reedbed

Occupancy: Oct to early Dec only

Counts:

22nd Oct	31
3rd Dec	6

Observed catchment area

All birds arrived from the south. Furthest observed birds from coming from South Beach, Studland. The few birds feeding at Greenlands Farm also headed this way. Not all birds that arrived roosted here, with some birds carrying on their northward flight over the harbour mouth, presumably heading for the St Ann's roost.

Pre-roost gathering

In October adjacent area of Shell Bay beach was used, from here regular mass flights took off to circle the reedbed area.
The site just scrapes into the winter roost survey by virtue of 6 birds still using the roost in early December.

Fig 12. Position of South Haven roost

12. Wareham Water Meadows west

Location: Small reedbed area on western side of bypass

Four birds roosted here on 11th Dec but no birds were recorded here subsequently. Just prior to entry to the roost, birds were feeding just a few metres away and entered the roost in virtual darkness.

Other roosting birds
Throughout the survey evidence suggested that some birds were roosting on their own. On many occasions single birds were often seen to fly off in completely different directions to the communal roosting birds. It is presumed that they were territory holding birds.

Two birds (male and female) roosted somewhere in Parkstone Marina in January at least. Probably on one of the yachts.

4.2 Afternoon gathering areas

Prior to pre-roost gathering, many birds had already gathered into flocks some distance away, at large open grass areas. The main activity was still feeding, but later in the afternoon included preening and mass flighting.
From here birds would eventually leave for the roost or pre-roost site.

Whereas the pre-roost sites were largely particular to one roost, the afternoon gathering areas could contain birds from a number of roost sites.
The areas were also used by a certain number of birds throughout the day, being later joined by progressively more birds throughout the afternoon.

Two sites were found. At Turlin Moor Recreation Ground and Baiter Recreation Ground.

Turlin Moor Recreation Ground

There are three adjoining large areas of grass at Turlin Moor, the most westerly area is more of a common, the other two form Turlin Moor Recreation Ground. Although all three seemed superficially very similar, all birds barring the odd one or two only ever used the eastern most of the three.

Anywhere between 75 and 116 birds could gather here during the core winter months. The max of 116 occurring on 5th January.

Early in the afternoon birds fed in loose scattered flocks, very often in distinct parts of the field. Just before leaving for the pre-roost sites all birds would be fairly close together in one large flock.

In between these times however, rather than a neat order of events leading from loose scattered flocks to the large flock at the end it could all be rather disordered. This was in most part due to the high levels of disturbance from dogs and dog walkers.

Short low flights of various size flocks were a regular feature. Sometimes these flocks took them towards other flocks and sometimes not. Some were initiated by disturbance, many not. Towards the end of the afternoon most of the flocking flights were by design. At this point feeding was also more regularly interspersed with preening and vocalisation.

When the whole flock was finally together the flights often evolved into regular circuits of the area. As these gained momentum, many were often mistaken by the observer for the final leaving flight as birds rose up and flew in the direction of the roost only to abort, circle around and come back down again.
Eventually one of these became the actual leaving flight, although more often than not some would peel off from the flock and come back again. This process could occur a number of times before all the birds eventually left.

All birds left to the south east in December and January. Most flew to the Poole Yacht Club roost but a very small number continued their journey south east. These were thought to be joining birds at Baiter.

During February, the situation changed when about 20% of the birds decided to leave to the north east. This flightline was followed to the Tesco Fleets Corner roost. The rest left to the south east as usual.

During this time, numbers at Turlin remained largely consistent and so were assumed to be the same birds changing their routine rather than new arrivals from somewhere else.

Baiter Recreation Ground

Baiter Recreation Ground held very similar numbers to Turlin Moor Recreation Ground, the highest count reaching 112.

The overall routine was also similar, with some birds using the site throughout the day being joined by increasing numbers of birds through the afternoon to reach maximum numbers just prior to departure.
Activities also included a mixture of low level and mass flights, both by design and from disturbance. Leaving direction for most birds was east across the Parkstone Bay.

Dog and dog walker numbers were much higher here but somehow disturbance wasn't quite so evident. Possibly as a result, these birds were much less inclined to engage in pre-departure flights with departure often occurring without any notice.

Although only resulting in one sentence for the report, the discovery that the Turlin Moor Recreation Ground birds were roosting at Poole Yacht Club was by no means straightforward, involving a lot of visits and charging about through Hamworthy to catch glimpses of birds as they took their often variable route to the roost. At this stage, the Poole Yacht Club roost was still to be discovered.

Tracking the birds from Baiter to their as yet undiscovered roost site was no less fun. To begin with, it all looked pretty straight forward with all birds, barring a handful, leaving directly to the east. Buoyed by the recent success of discovering that wagtails roosted at marinas, I watched confidently as the birds headed straight for Parkstone Yacht Club.

A phone call to the Yacht Club to get permission to enter and count their roosting wagtails, and the following evening I was in place. As dusk approached I could hear the wagtails approaching only to then see them fly straight over my head!

The birds continued south east, a heading leading straight to Salterns Marina. Another phone call to get permission to enter Salterns Marina and I was again on site and ready to count. Only to be foiled again as the birds duly arrived then promptly carried straight on, snubbing the very expensive yachts here also.

Eventually, after three more visits the destination was finally located at St Ann's Hospital.

As mentioned, a handful of birds did leave Baiter in other directions. Two to three singletons regularly left on various separate north easterly headings presumably to roost on territory. Two or three birds also headed south west toward the roost at Poole Yacht Club.

Regarding the birds that flew from Turlin Recreation ground that were presumably heading for Baiter, it seems likely that these also then flew east to St. Ann's Hospital.
From Turlin to St Ann's hospital could be considered a long way to travel to a roost site but for a Pied Wagtail, this is no real distance at all. Other studies have shown that wagtails often travel 10km to a favourable roost site. (Broom *et al* 1976)

Baiter Recreation Ground was also a post-roost gathering site for the same birds, as they were all back again first thing in the morning. Lengths of stay varied, with a few birds moving on only a couple of minutes after arrival. The early leavers always went north over Poole Park lake to feed on the circular area of lawn north of the lakes.

All other birds departed on various westerly headings, with some birds remaining throughout the day.

4.3 Leaving for the roost site

During this survey some effort was made to record patterns of behaviour, particularly regarding leaving times at afternoon gathering areas. Although sample sizes were only small and there were anomalies, a pattern did emerge.

Recent surveys in Poole Harbour have shown that light levels for many birds are the trigger for movement between roosting and feeding sites. At least in terms of leaving gathering areas for the roost site, the findings during this survey suggested that this was not the case with Pied Wagtails, with birds leaving feeding areas on average at lower light levels during December and January than November and February.

A lot of data was amassed but the number of variable factors, particularly differences in cloud cover, meant that data valid for direct comparison was rather limited. The largest pool of results was gathered at full cloud cover and so these were used.

Excluding the odd one or two outliers that didn't fit the pattern, the average leaving times from the gathering areas in December ranged from between 25-10 mins before sunset, in January between 17-3 mins before sunset and in February 37-30 mins before sunset.
Partial data was also collected in November with findings closest in timings to February, to complete a crude curve when represented graphically.

Pied Wagtails are known to mainly take very small prey items. As a result they can be actively feeding for sometimes 90% of the day in winter to maintain energy balance (Davies 1982). It would therefore follow that as the daylight hours reduced a higher percentage of them would be used for feeding.

Correspondingly, pre-roost activities were also much reduced during mid winter, with many birds flying directly into the roost on arrival.

4.4 Pre-roosting

Pre-roosts are usually formed very close to the roost site. At urban sites they are usually flat roof areas, for sites such as reedbeds they are usually large open areas on the ground. The main activities are preening, chirping and standing around. These non-energetic activities are however often interjected with very energetic mass circular type flights. With no obvious catalyst, the whole flock can suddenly take to the air and fly up as one. The flight is often quite short, quickly bringing them back to where they started.

Nearer to roosting time, the flights range further to perhaps include direct flights over the roost site. Eventually one of these flights sees birds drop into the roost. Not all may enter however, with some birds flying back to the pre-roost site to begin the process again until all are eventually in the roost.

During some of these flights, birds may peel off and head for a different roost site all together although this only occurred during the autumn.

These 'mass flights' as they have been termed didn't always occur. On these occasions birds just dropped straight in from the pre-roost site or directly from the arrival flight.

At South Haven, the pre-roost gathering area was Shell beach. From here the gathered flock would make regular reconnaissance type flights to the reedbed, do a few circuits then fly back to the beach. Flights often included a lot of vocalisation. Later flights would include lower passes over the roost site until eventually one of the flights saw the birds drop en-masse into the reedbed.

At Middlebere South reedbed roost the pattern was very similar. The gathering area here was a patch of ground just to the east of the main reedbed from where flights were taken around the whole area. Some of the further ranging flights took the birds out of sight, often returning with less birds.

Flight activity was at its peak in October when numbers were highest. At times the scene was quite chaotic with some birds eventually dropping into the reeds, some carrying on the circuit, some coming back out of the reeds and others flying off to a different roost site completely.

At all sites late arrivals went directly into the roost.

The most persistent mass fliers were at the Wytch Farm gathering station roost.
Mass flighting here was often perpetual, from the moment the birds arrived until they went to roost. The flights also seemed the most excitable with many being quite erratic, often involving quick changes of direction with lots of jinking and swerving. As with other sites the circuits often got wider and higher as roosting time approached, with the flock often going out of sight and more often than not returning with less birds.

So what is all this flying about about?

The function of pre-roost mass flights is still a matter of some discussion so it was decided to try and add some data to this debate during this survey.

A theory originally put forward by V.C.Wynne-Edwards (1962) suggested that mass flights were a means of population control. The flights providing a stimulus to encourage dispersion and or onward movement of migrants so that the local food resources wouldn't get over-stretched.
Mass flights are therefore most likely to occur during migration or when numbers at roost sites are rapidly increasing or too large.
This theory was not contradicted by the findings of this survey:-

Mass flights occurred at all roosts found in October and November.
At the largest roost sites mass flights continued during the core winter months.

No mass flights occurred at any of the smaller roost sites.
Wider ranging mass flights often returned with less birds.

Up until February, the maximum number of birds using the Tesco Fleets Corner roost was 30. During this time no mass flights were observed. After a rather dramatic influx of birds in February, mass flighting then became a feature.

'Large' is obviously not quantifiable but with counts in the 90's for Poole Yacht Club and St Ann's, one could conceivably consider these roosts to be large, but no mass flights were observed here.
The numbers at these two roosts sites were however pretty stable throughout the core winter months. This would suggest the same birds were involved and they were finding enough food each day, negating the need to encourage birds to move on.

4.5 Entering the roost

Times of roost entry and behaviour at the roost was variable, being influenced by roost numbers, time of year, weather and time of arrival. Behaviour also often seemed particular to an individual roost site.

Broadly speaking, it was found during this survey that times of roost entry followed a similar pattern to leaving times at afternoon gathering areas, with birds entering the roost later in terms of sunset times in mid winter compared with the months either side.
There were many instances in October and November of birds entering roosts well before sunset and instances of birds entering roost sites in January in the dark.

During the autumn at reedbed roosts, birds were prone to enter en-masse or in large groups. Late arrivals which missed the mass flights flew directly into the roost on arrival.

At the medium size roosts, entry was generally in small flocks over a period of time. When numbers at Tesco Fleets Corner were no more than 30, each bird entered individually. Entry however, was not always a straightforward flight from the roof to the tree but often a rather tentative approach. Some flights were abandoned half way, some birds landed briefly in the roost tree then came back out, some even hovered in quite an accomplished fashion before either eventually alighting or flying back to the roof. Even birds that had been in the roost tree for some time could come back out and move to a neighbouring tree. As a result the whole process could be rather convoluted.

Birds at smaller roosts tended to arrive and enter much later, often in virtual darkness, as did small parties or individual birds at larger roosts with all birds dropping directly into the roost on arrival.

Once in a roost, as would also be expected, a certain amount of jostling for position would occur to include various vocalisations and occasional bill snapping.

What did surprise however was the amount of birds that could fit into one small tree.
After counting out what seemed like an inconceivable amount of birds from one small tree during a morning count, just when you thought that there could surely be no more in there, another flock would come out. And then another!
And it wasn't for the lack of available trees. At Tesco Fleets Corner for example, there were two neighbouring virtually identical conifers that were ignored, except for around 10 birds which perhaps had no choice.

One might assume therefore that the birds were roosting together to perhaps benefit from transference of body heat, however studies have shown that this is not the case. Wagtails do not huddle and always maintain a certain distance apart, even when temperatures go well below freezing. (Broom *et al* 1976)

At both Tower Park and Fleets Corner the early winter roosts were in small deciduous trees. When the leaves dropped, the roost switched to nearby conifers.

4.6 Leaving the roost

Leaving patterns also varied somewhat between months and also between roosts in terms of leaving times, group sizes and the overall departure period.

At Tesco Fleets Corner and Tower Park, for example, some birds left the roost trees in darkness well over an hour before sunrise, these were nearly always single birds, occasionally two. During this time the departure of one bird didn't necessarily trigger the departure of another, with gaps between departing birds often measured in minutes rather than seconds.
After that it could be either a steady procession of birds in rather small groups which could last up to an hour or a series of rather larger flocks over a rather shorter time period.

Disturbance could also be a factor with sudden loud noises particularly in urban areas prompting a few birds to leave, but in general not really affecting the departure sequence.

It was however, affected by Sparrowhawks. At Tower Park, the roost trees here are partially illuminated and the local Sparrowhawk could arrive in darkness before the birds departed, diving straight into the roost tree. Although initially prompting a large flock of birds to leave, many surprisingly stayed in the tree, coming out later at their leisure in the normal fashion.

Departure details were regularly recorded during the survey. Below are tables from two such visits, Tesco Fleets Corner and Wytch Farm gathering station.

Times	Flock sizes of leaving birds	Groups	Birds	Av party size
6.25 - 6.30	1 1 1	3	3	1
6.30 - 6.35	1 1 2 1	4	5	1.25
6.35 - 6.40	1 1 1 1 1	5	5	1
6.40 - 6.45	2 2 1 1 1 1 1	7	9	1.28
6.45 - 6.50	1	1	1	1
6.50 - 6.55	0	0	0	0
6.55 - 7.00	1 2	2	3	1.5
7.00 - 7.05	1 6 4 5 7 4 2 1 1 2 1 1 1 1 1 1 7 1 2 1	20	50	2.5
7.05 - 7.10	12 15 26 1 2 1 11 2 11 2 2 13 5 1 1 2 1 1 2 1 1 1 1 1 1 2 1	27	120	4.44
7.10 - 7.15	1 1 7 13 9 8 4 1 11 4 5 1	12	65	5.41
7.15 - 7.20	7 1 4 3	4	15	3.75
7.20 - 7.25	2	1	2	2
Totals		**86**	**278**	**Ave - 3.23**

Table 1. Roost leaving times Tesco Fleets Corner, 13th Feb, 8/8 cloud cover, Sunrise 07.25hrs

Times	Flock sizes of leaving birds	Groups	Birds	Av party size
7.50 - 7.55	2 2 2 1 2 2 1 1 2 1 1 1 1 3 1 1 1 2	18	27	1.5
7.55 - 8.00	2 1 1 1 1 3 2 1 4 3 1 1 1 1 2 1 3 2 2 1 1 1 1 1 1 1 2 1 1 1 1 2 2 1 3 2 1 2 2 1 3 1 1 1 2 2 1 5 1 1 2 1 1 2 1 1 1	57	89	1.56
8.00 - 8.05	2 2 2 1 2 4 2 2 2 1 1 1 2 2 1 3 2 1 1 2 2 1 3 1 1 1 1 1 4 1 3 1 2 2 1 1 2 1 1 3 **11** 2 1 2 1 3 1 1 1 1 1 1 2 1 1 **7** 1 2 1 2 2 2 2 2 1 1 1 1 5 1 1 1 1 1 1 2 1 1 2 1 4 1 3 2 1 1 1	87	155	1.78
8.05 - 8.10	2 2 1 3 3 3 2 1 2 1 1 1 1 1 3 1 1 1 1 3 2 1 2 1 1 1 4 1 2 1 1 1 1 1	34	54	1.58
8.10 - 8.15	1 1 1 1 1	5	5	1
8.15 - 8.20	1 3 1 1 1 1 1 2 1 2 1 4 1 1 1 1 1 1 2 2 1 1 2 3 3 2 1 1 1 1 1	31	46	1.48
8.20 - 8.25	2 1 1 1 1 1 2 1 1 1 1 1 2	13	16	1.23
8.25 - 8.30	2 2 1 1 2 1 2 1 2 1 1	11	16	1.45
8.30 - 8.35	1 1 1 2 1 1	6	7	1.16
8.35 - 8.40	1	1	1	1
Totals		**263**	**416**	**Ave - 1.58**

Table 2. Roost leaving times Wytch Farm gathering station, 13th Jan, 0/8 cloud cover, Sunrise 8.05

Although these only represent snap shots, the results are interesting.
Most notably for the small flock sizes, with a maximum flock size of only 11 for Wytch.

4.7 Daytime feeding areas

Although not one of the aims of the survey, all feeding areas found were recorded and the findings are presented here.

Thrasher's Lane (Bushey)
Up to 105 birds were counted in a stubble field at Thrasher's Lane to the west of Bushey. This was one of the first ports of call for birds leaving the Wytch Farm gathering station roost in the morning.

Keysworth fields
Access was not possible to Keysworth but some parts were viewable from outside of the area.
A group of 11 birds seen on a couple of occasions feeding on the meadows north of Buck's Cove in late January and early February. Also what was possibly the same 11 feeding in paddocks north of Keysworth Farm.

Upton Country Park
Up to 10 birds feeding in the very muddy cattle field directly south of the car park.
Birds observed flying from here in the afternoon, either flew south or headed for the Turlin Moor Recreation Ground.

Worgret Fields
At least 37 birds feeding in fields south of Worgret Farm on 16th November but not seen in December or thereafter.

Poole Park
Up to five birds on the circular lawn.

Arne
Up to five birds in cow fields.

Other sites
Although the recording area was large and efforts were necessarily concentrated where the largest concentrations of birds were, regular visits were made to other sites with generally only one or two birds were found.

Studland area: Despite extensive areas of muddy paddock, particularly on the west side of the village, the whole area only came up with 6 birds in total.
Greenlands Farm: Maximum of two
Ower: Two singletons
Fitzworth: One or two birds
Middlebere area: One or two birds

Also single and 'pairs' of birds were regularly encountered throughout the survey area.

Some male Pied Wagtails will hold territory throughout the winter, defending against all intruders. Sometimes however, they will allow a female or even a sub-ordinate dull plumaged first winter bird to temporarily share the territory when the food supply allows. This 'satellite' bird is an extra pair of eyes to look for predators which allows more efficient feeding for the male and it can also help see off other rival males. This arrangement is only cost effective if the food supply is high enough to sustain another bird and this is the calculation the male Pied Wagtail makes. If supply starts to outstrip demand the 'satellite' bird will be ousted.

A male regularly visited a garden in Nutcrack Lane, Stoborough during the period of the survey. This part of its territory was jealously guarded, any males that turned up were seen off, even a male merely over flying the garden was swiftly intercepted and seen off.
He did however occasionally tolerate a female 'satellite' bird, which was allowed to feed alongside him in the garden.
Sometimes the satellite bird can become the future mate of the territory owner but this is often not the case. (Davies 1982)

The roost sites of the territory holding birds encountered during the survey were not determined, however other similar surveys suggest that they can sometimes join the local roost as well as roosting within their territory.

5. Discussion and conclusions

For once, this time it was the southern half of the harbour that was the poor relation, with urban roosts in the north of the harbour recording area being the main feature of the survey.

The picture certainly would have been a tale of two halves were it not for the very large roost at Wytch Farm gathering Station. Although some birds were seen feeding at Thrasher's Lane, many were however considered not to be feeding within the recording area.

In fact, large tracts of the southern half of the harbour were pretty much devoid of wagtails altogether apart from the odd singleton or small feeding group.

In contrast, large feeding flocks were encountered in the northern half of the harbour, despite often high levels of disturbance.
It seems that here, urbanisation acclimatisation has rendered them somewhat impervious to human and dog disturbance.
During some afternoons at Turlin and Baiter, disturbances could occur every few minutes but this still didn't seem to detract from the sites attractiveness with numbers consistently high throughout the survey.

Right from the word go, it was clear that the wagtails were going to be trouble! Although preparatory survey fieldwork mainly involved migrant birds that by their very nature are moving around, as little as 17 days into the survey, many birds had already changed their routines and roost sites.

Things had somewhat settled down however by the end of November, following the traditional relocation of birds from reedbed roosts to urban winter roost sites.

Settled routines however didn't mean that the picture was straightforward.
Before the survey began it was assumed that as with other flocking birds such as Rooks and Jackdaws, distinct populations of birds would share specific feeding areas centered around a specific roost site.

However, this was not entirely the case with Pied Wagtails. Although the majority of birds using any particular roost did tend to arrive from a specific area, the overall catchment areas significantly overlapped to often include other roost sites and beyond. As a consequence some birds would overfly a roost site to reach another. On more than one occasion, a group of birds would arrive at a particular roost site only to split at the last minute with some birds dropping in and the others carrying on to a different roost.

Although Pied Wagtails do love to flock, it seems that they are not particularly particular with who they flock with. Often birds engaging in mass flights together at afternoon gathering areas would later leave for different roost sites. They could then further engage in mass flights at a roost site along with the other various gathered birds only to then move on again to a different site to roost.

During February, for reasons unknown, all bar about 20 birds at Tower Park (some 250 of them) went missing. At around the same time Tesco Fleets Corner numbers rose by some 250 birds. Although the figures match perfectly, it was slightly more complicated than that as at the same time a few birds from other roost sites also appeared at Tesco Fleets Corner.
Around 20 birds that had been roosting at Poole Yacht Club all winter started heading north east from Turlin Moor Recreation Ground to roost at Fleets Corner, with the remaining Turlin birds maintaining their winter routine heading south east to the Yacht Club.
All birds concerned were thought to be the same local individuals as overall numbers were still consistent.

The question of whether roost sites change over longer periods of time can be partly answered by looking at past records. Reference to Dorset Bird Reports going back to 2000 reveals that only three of the roost sites located during this survey had been previously recorded, Tesco Fleets Corner, Tower Park and South Haven.
Conversely, there were other sites that had been used that were no longer in use during this survey.

Up until fairly recently there had been a reasonably sized Pied Wagtail roost in trees in Poole High Street. No birds were present during this survey, with all the local birds gathered at Baiter Recreation Ground flying to St Ann's Hospital to roost.
The reason for the switch may not have been a reduction in the desirability of Poole High Street, rather an increase in desirability at St Ann's which has recently undergone extensive redevelopment to include the rather sheltered quadrangle where the birds now roost.

Given the obvious adaptability of Pied Wagtails to urban environments, their willingness to change roost sites and a seeming increase in tolerance of people and dogs at feeding areas, their success looks likely to continue.

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