

## **A survey of the distribution, timing and activities of migrant osprey (*Pandion haliaetus*) in Poole Harbour during autumn 2015.**

Brittany Maxted

This document summarises data collected through a citizen science survey conducted during the Autumn of 2015, regarding the activity of migrating ospreys present within Poole Harbour and the surrounding area. A request for sightings was advertised in a number of birding forums, at local nature reserves and on social media. Sighting forms were available online to the public which could be downloaded, completed and submitted via email. At the end of the season all data was compiled and analysed. The results are described below:

### **Migrant totals**

We received a total of 167 survey submissions, which reported an encouraging 204 individual migrant osprey sightings. This is approaching double the 113 observations recorded in 2008, and indicates a promising trend both for increasing use of Poole Harbour by migrant and nomadic osprey and for the continuing expansion of the British population. A significant proportion of submissions described multiple ospreys in one sighting, often including interaction between individuals. The greatest number of individuals seen during one sighting was four.

### **Distribution**

Ospreys were observed in ten distinct regions of the harbour. The number of sightings and the number of ospreys per sighting at each of these sites are described in Figure 1. Five of these ten harbour regions each had over 30 observations during the autumn period, and accounted for over 80% of all osprey sightings. This is in contrast to 2008 when a single site accounted for around 50% of sightings (Appendix: 1A and 1B). A map displaying the distribution of all sites and their respective sighting counts is shown in Figure 2. Of particular note is the positioning of the five most frequented sites, which all reside on the south side of the harbour. Here, both human development and activity are minimal in comparison with the urban conurbations and busy port on the northern shores of the harbour, and hence disturbance poses far less of a threat to migrant ospreys. The suitable habitat on the south side of the harbour is therefore of the utmost importance for ospreys and it is recommended that a concerted effort is made to conserve and protect these sites in the future.

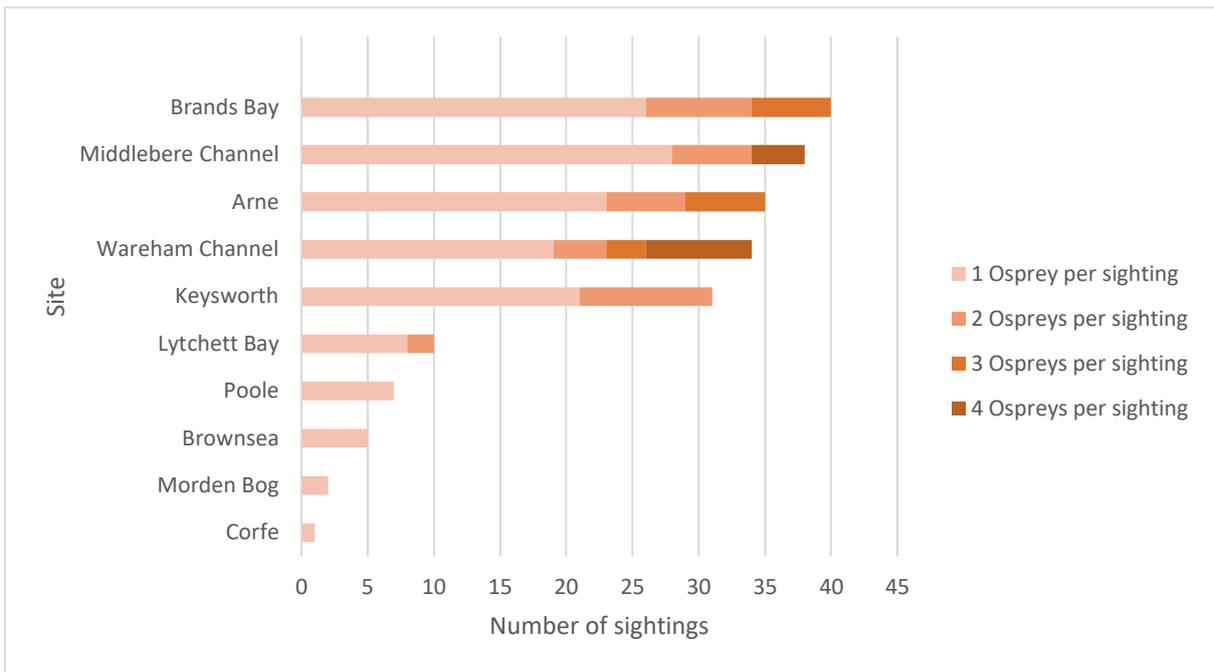


Figure 1. Number of osprey sightings at sites throughout Poole Harbour during autumn 2015.



Figure 2. Number of osprey sightings at sites throughout Poole Harbour during autumn 2015.

## Timing

The dates of sightings ranged between June 23<sup>rd</sup> and November 11<sup>th</sup> 2015. August was the most productive month with nearly 100 sightings, closely followed by September with 87 sightings (Figure 3). This is a surprising contrast from 2008, when August had only 28 osprey sightings and September was the most productive month with 57 sightings. This, again, is a positive indication of increasing use of Poole harbour by migrant ospreys and of overall population growth. We may also be seeing a gradual shift towards earlier migrant passage, and hence overall migratory timing. The daily sighting counts for 2015 are shown in Figure 4. Migrant ospreys began arriving in earnest in mid to late August, and presence remained high through to mid-September. The greatest number of sightings in one day was 14 individuals on both August 28<sup>th</sup> and September 1<sup>st</sup>.

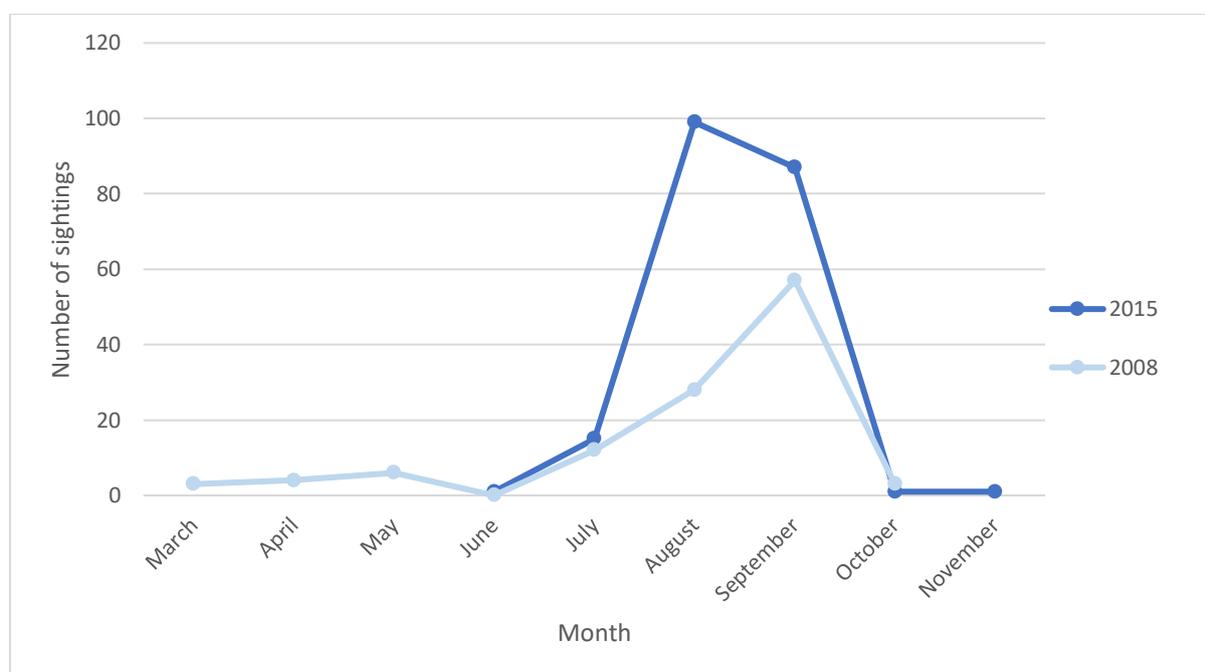


Figure 3. Number of sightings of osprey per month in Poole Harbour in 2008 (Mitchel, 2008) and 2015 (Maxted, 2015).

For daily timings, sightings peaked between 10:00 and 11:00 am, with activity also high at sunrise and tailing off throughout the day. First sightings occurred after 6:00 am and last sighting before 8:00 pm. This indicates that the majority of osprey activity in the harbour occurs during the morning, though this also may be an artefact of the greater efforts of birdwatchers which typically occur during the earlier part of the day. This general trend held when analysed separately across individual sites.



## Activity

Out of the 204 of the ospreys observed, behaviour was noted for 183 individuals. Approximately 50% were seen in flight, 25% resting, 13% hunting and 10% perched feeding (Appendix 2A). In particular, suitable hunting areas are of crucial importance to migrant ospreys and therefore of great interest to our analysis. Figure 6 shows the distribution of sightings of hunting activity throughout the harbour. Note the importance of the four largest bays and estuarine areas. Hunting occurred throughout the day, but peaked significantly in the hour proceeding 10:00 am (Figure 7). Again this may be an artefact of the times which visitors chose to visit local sites, however it likely also relate to favourable conditions or the need to satisfy the physiological energy requirements of daytime activity. Perhaps curiously, hunting was favoured on high tide (Figure 8). This is contrary to our expectation as ospreys often favour shallow waters for hunting, as prey are forced closer to the surface and more easily seen. However, the shallow nature of favoured hunting grounds and the unusual tidal patterns in Poole harbour may limit prey availability at low tides by pushing prey out into inaccessible channels, and hence limiting the hunting success of ospreys.



Figure 6. Distribution and number of sightings of osprey displaying hunting behaviour in Poole Harbour during autumn 2015.

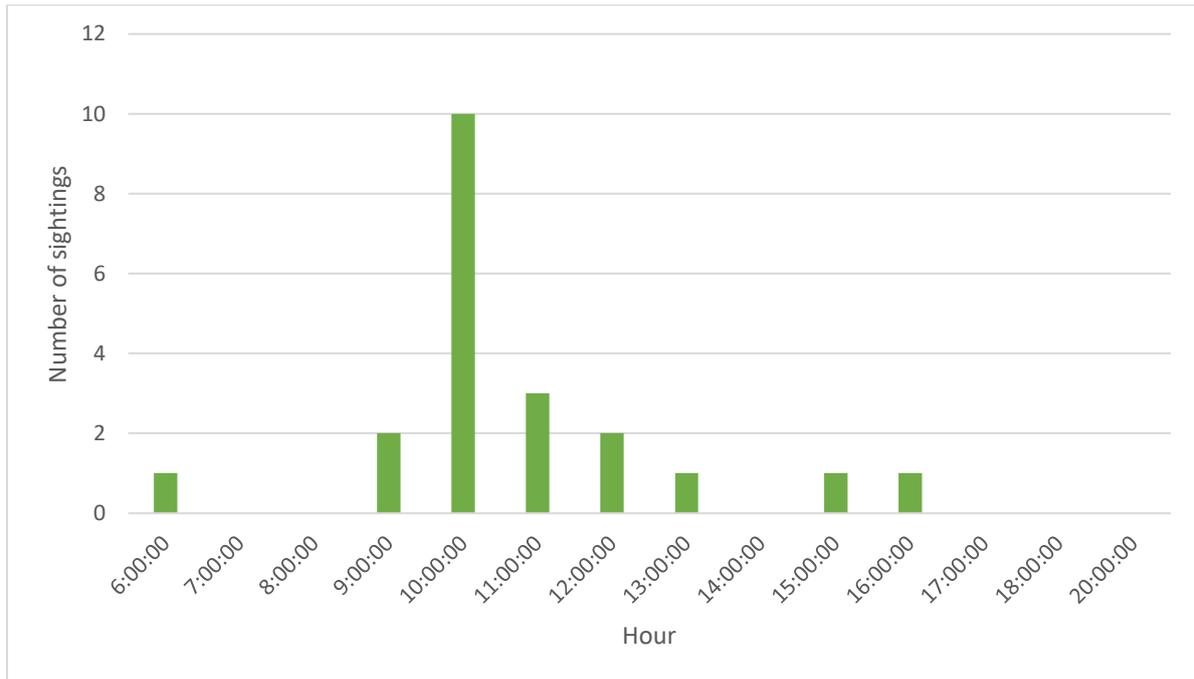


Figure 7. Timing of sightings of osprey displaying hunting behaviour in Poole Harbour during autumn 2015.

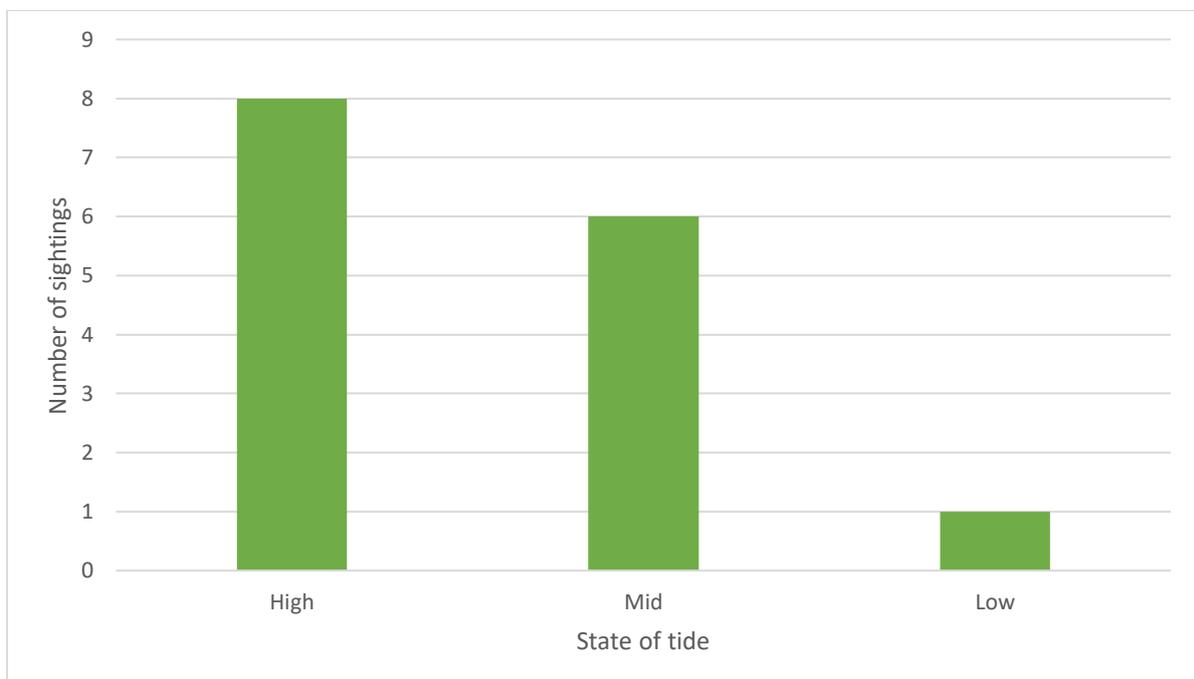


Figure 8. State of the tide at sightings of osprey displaying hunting behaviour in Poole Harbour during autumn 2015.



Figure 9. Distribution and number of sightings of osprey displaying feeding behaviour in Poole Harbour during autumn 2015.



Figure 10. Distribution and number of sightings of osprey displaying resting behaviour in Poole Harbour during autumn 2015.

Areas utilised for hunting were also largely favoured for feeding (Figure 9) and resting (Figure 10), likely due to the energetic costs associated with transporting caught prey to feeding perches, and their secluded nature. We had hoped to gain an insight into the main prey species on which ospreys are feeding in the Poole Harbour, however none of the 167 submissions were able to accurately report the species of fish seen.

There were a number of further features of the migrant population which we had hoped to ascertain from this survey. First, the demography of individuals utilising the harbour i.e. the ages and sexes of individual birds. Unfortunately, lack of observer expertise meant that only a small number of individuals were identified as either juvenile or adult, and no birds were successfully sexed. Second, to identify any individuals bearing Darvic leg rings by reading their unique characters. Again no individuals were successfully identified, mostly due to the extreme distances at which the majority were observed and the difficulties associated with reading rings from birds in flight.

This record, as with any publically collected data, will undoubtedly have significant biases towards observer preferences – in this case of sites, times, dates and conditions – and therefore, without further analysis, cannot be used as an accurate representation of the total migrant osprey population in Poole Harbour. Despite this, however, it provides the most extensive dataset of osprey activity within the harbour to date and, in particular, allows a greater understanding of preferential sites for activities such as hunting, feeding and roosting. The data we have collected demonstrates not only the importance of the Poole Harbour as a stopover site for migrating ospreys, but additionally its suitability as a habitat capable of sustaining multiple (potentially breeding) individuals.

**Appendix**

**1A.**

Site within Poole Harbour	% of Records
Middlebere	48
Arne	12
Brownsea Island	9
Wareham Channel	7
Lytchett Bay	6
Swineham	5
Holes Bay	3
Holton Lee	3
Studland	3
Wareham	3
Arne Moors	1
Wytch Lake	1

**1B.**

Site within Poole Harbour	% of sightings
Brands Bay	20
Middlebere Channel	19
Arne	17
Wareham Channel	17
Keysworth	15
Lytchett Bay	5
Poole	3
Brownsea	2
Morden Bog	1
Corfe	<1
Durlston	<1

**1A and 1B.** Percentage of sightings of osprey pertaining to sites in Poole Harbour in 2008 (Mitchell, 2008) and 2015 (Maxted, 2015) respectively.

Activity:	<i>Transitional Flying</i>	<i>Resting</i>	<i>Hunting</i>	<i>Perched Feeding</i>
<i>Number of individuals</i>	91	50	23	19

**2A.** Number of sightings of osprey displaying four distinct behaviours in Poole Harbour during autumn 2015.