Monitoring the 2017 Autumn Migration of the Woodpigeon (Columba palumbus): Take-off Decision making and Forecasting

Enrico Cavina¹, Denis Bianchi¹, Vasco Feligetti¹, Graziano Giovanetti¹ and Rinaldo Bucchi²

¹Club Italiano del Colombaccio
²Editor sez. Monitoraggio selettivo, Progetto Colombaccio Italia

November 30, 2017

Abstract

An innovative experimental app (Monitoring Woodpigeons Live - MCL) performs real time monitoring of the arrivals and transits of woodpigeons in Italy. Analysis of the migratory samples provided via the app with special focus on the Mesola stop-over and take-off provide clear evidence of the relationships between the "decision making" to migrate and atmospheric pressure jumps 12 to 24 hours before in a given area. The take-offs were often successfully forecasted. A video-film was made which supports this thesis. The authors underline the value of prediction in research as a fundamental aspect of the scientific method.

1 Introduction

The autumn of 2017 migration of woodpigeons (Columba palumbus) in Italy and Europe started early (first week of October) and continued strongly until 10 November. A new experimental method was applied by 148 registered observers of the Club Italiano del Colombaccio Association, monitoring both real time and daily totals of the local migration, using MONITORAGGIO COLOMBACCIO LIVE or MCL, an information gathering system for Smartphone, Tablets, PCs etc¹ (Fig.1) leading to detailed numerical results and map images over 3 latitudinal bands (North, Centre, South) of the Italian peninsula, a migratory bridge over the Mediterranean Sea.

From 30th September to 10th November 2017, the MCL system observed 590,430 migrating woodpigeons in 4272 sightings with an average of 46 birds/flock and average height of flight of 80-90 m. An analysis of the migration’s evolution was developed on-line via the CIC Website, weekly together with a forecast for the following week.

The total of 590,430 woodpigeons is certainly conservative with respect to the real number of woodpigeons from East Central Europe and Balkans passing through Italy, especially so considering

¹ http://www.ilcolombaccio.it/CMS/monitoraggio-colombaccio-live-mcl/
the small number of active observers and the 1200 Km length of Italian peninsula with relatively few Observatory sites. A migratory mass estimated to be between 1,500,000 and 2,000,000 woodpigeons has not happened before in the memories of Italian expert hunters.

The data collected by MCL - as planned in the original project - will be objects of further studies concerning the relationships between migration, biotic and abiotic factors, particularly with regard to isobaric corridors as flight paths and other climatological links (origin, transit, stop-over, wintering areas). Other integrated studies promoted by CIC will be performed by other reasearchers such as Progetto Colombaccio Italia and other collecting methods and analysis.

2 Aims

The aims of the present preliminary instant short paper-report are:

- identifying migration’s samples
- mass take-off analysis
- take-off decision factors
- related samples in Europe
- scientific validity of predictive methods
3 Italian Samples

Samples in Italy using MCL data integrated by CIC Forum as of 1st Nov were as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>woodpigeons</th>
<th>sightings</th>
<th>pressure jump</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-9 October</td>
<td>40.795</td>
<td>676</td>
<td>13 hPa</td>
</tr>
<tr>
<td>25-26 October</td>
<td>55.945</td>
<td>645</td>
<td>23 hPa</td>
</tr>
<tr>
<td>31 Oct-1st Nov.</td>
<td>205.950</td>
<td>172</td>
<td>27 hPa</td>
</tr>
<tr>
<td>9 Nov. (unconfirmed)</td>
<td>5950</td>
<td>59</td>
<td>20 hPa</td>
</tr>
</tbody>
</table>

![Figure 2](https://www.youtube.com/watch?v=pGK6z9SY8Cg)

All the samples happened after a pressure jump of more than 10 hPa, 12-24 h. before the event, followed by isobars over Italy 1020-1030 hPa with no turbulence, mostly moderate tail-winds, warm temperatures, visibility more than 10 Km. and the moon surface illuminated more than 40 percent. The most impressive sample happened 31 October after a pressure jump of 27 hPa over the Mesola Forest area. (Fig.2 a,b,c,d). The incomplete sample of the 9 November, at the the tail of the migration season, is interesting because the birds were mostly young, with incomplete moult, and observed flocks mostly numbered 100-500 birds.

Figure 2:

Particularly impressive were the isobaric corridors (1020-1030 hPa) through all of Europe (Fig.3) The metro data of the period are represented in Fig. 3 as licenced from Weather History Weather Underground) with evidence of air pressure jumps corresponding to the days of samples. The incomplete sample of the 9 November, at the tail of the migration season, is interesting because the birds were mostly young, with incomplete moult, and observed flocks mostly numbered 100-500 birds.

2https://www.youtube.com/watch?v=pGK6z9SY8Cg
4 European samples

If we consider the samples recorded in Europe we underline the same prevalent "decision-making" factor as a pressure jump of more than 10 hPa occurring 12-24 hours before take-off (except for the Pyrenees sample).

Falsterbo (Sweden)-delayed migration

<table>
<thead>
<tr>
<th>Date</th>
<th>Woodpigeons</th>
<th>Pressure Jump</th>
</tr>
</thead>
<tbody>
<tr>
<td>24th Oct.</td>
<td>191,700</td>
<td>jump 15 hPa</td>
</tr>
</tbody>
</table>

France Observatories (Eastern boundary of Central France)

<table>
<thead>
<tr>
<th>Date</th>
<th>Woodpigeons</th>
<th>Pressure Jump</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th October</td>
<td>147,000</td>
<td>20 hPa</td>
</tr>
<tr>
<td>13th October</td>
<td>310,000</td>
<td>13 hPa</td>
</tr>
</tbody>
</table>

France (Pyrenees)

<table>
<thead>
<tr>
<th>Date</th>
<th>Woodpigeons</th>
<th>Pressure Jump</th>
</tr>
</thead>
<tbody>
<tr>
<td>24th Oct.</td>
<td>418,030</td>
<td>not significant</td>
</tr>
<tr>
<td>31st Oct.</td>
<td>316,956</td>
<td>not significant</td>
</tr>
</tbody>
</table>

5 Discussion

All the samples in Italy were forecasted by forecasting bulletins on the CIC Website one week before. The most important and impressive documented special event was the take-off of an estimated 100,000 to 200,000 woodpigeons from the Mesola Forest, Ferrara, close to the Po River Delta (Adriatic sea in front of Istria) at 6:40 a.m. 31st October. During the week before, some observers have documented the presence of many thousands of woodpigeons in "Zugunruhe" feeding in their stop-over in the Mesola area (Fig.4). On this basis and using meteorological forecasts it was possible
to predict the take-off early in the morning of 31st October at 6:40 a.m. three days before it actually happened (Fig. 5 - 6).

One of the Authors (Denis Bianchi), alerted by the forecast was able to make an impressive 10 minutes long video recording documenting the take off of many thousands of woodpigeons. This video has been uploaded to Youtube and is considered an essential part of the present paper. After the take-off from Mesola the migration was followed by CIC forum observers through the Appenine Mountains, the Padania Valley, as far as the Tyrrenhenian Coast (Populonia Tuscany) and the Gulf of Liguria (Genoa) on the migration routes to South Italy, Corsica, North Africa, the Balearic Islands and the French and Spanish coasts. This Youtube video is a unique documentation of the take-off of woodpigeons in Ornithological History.

We should also mention that similar simultaneous take-offs at dawn on 31 October, happened at other stop-over areas of the Italian Adriatic coasts (Pesaro-Monte Conero-other) and probably from Balkan coast following arrivals in the morning and afternoon of 31 October.

6 Conclusion

In this short preliminary paper, we have taken the liberty of underlining the value of prediction in research as fundamental tool of the scientific method. Reason allows us to make predictions about the natural world. Scientists attempt to predict and perhaps control future events based on present and past knowledge. The ability to make accurate predictions is a fundamental aspect of the Scientific Method.

We intend to continue on this path in our studies about relationships "Migration-Air Pressure changes - Biological barometer PTO" despite the silence of the "Official Ornithology". We strongly

3 https://www.youtube.com/watch?v=pGK6z9SY8Cg
4 https://explorable.com/prediction-in-research
5 https://www.colby.edu/biology.html
reaffirm the concepts expressed in preceding papers\textsuperscript{6}-\textsuperscript{9}.

7 References

See the Bibliography in Cavina (2015)\textsuperscript{6}.

\textsuperscript{6}http://www.scienceheresy.com/ornithologyheresy/Cavina2015.pdf
\textsuperscript{7}http://www.scienceheresy.com/ornithologyheresy/VitaliPTO.pdf
\textsuperscript{8}http://www.scienceheresy.com/ornithologyheresy/Cavina.pdf
\textsuperscript{9}http://www.scienceheresy.com/ornithologyheresy/Cavina2016.pdf