

BRADFORD ORNITHOLOGICAL GROUP

The Visible Migration of Birds

UNDERSTANDING PRACTICAL WEATHER REPORTING METHODS and more.....

Introduction.

Watching inland Visible Migration is not just about the birds! Just as a specialist on a particular breeding species needs to know more than just about the bird its self, its breeding ecology, origin, distribution, food and the like, he also needs a good working knowledge of its habitat. The habitat through which Visible Migration occurs is the SKY and the air and conditions within it. Alright, certain species tend to migrate by following the trail of their preferred land habitat, geographical leading lines, lower altitude cols, gaps, valleys and the like, with even lights at night and the moon playing their own part, but all that is well known and well written about elsewhere. As also is the detail of the way birds, depart distant shores, cross seas and in what manner / preferred conditions. The aim of this document is to assist and promote appreciation by the individual as to how the sky and local conditions within it, may induce or detract from the way birds migrate visibly over land. The descriptions and occurrences are specifically referred to the inland, upland environment.

Whilst detail national and international sources of all aspects of the weather, with archives, are freely available on the internet, the local conditions on the day at your watchpoint, are not. To aid appreciation and comparison both now and in the future they really do need to be recorded in addition to the birds themselves. At least then in the future you may be able to hazard a good guess in addition to the time of year, as to why on one day there were only three Meadow Pipits > SE and the next 300, or even 3000!!

Accepted practical methods of recording the weather, sky and conditions within it are included to enable a degree of uniformity to be maintained between watches and the people watching. In addition, to break up the theory, some humorous? actualities, and hint / tips are included.

What to record - Getting Started.

Watching Visible Migration is both initially and ultimately about enjoyment – if you don't enjoy it you wont do it! So the most important thing initially is to develop your own way of watching, recording and reporting that is pleasurable to you. The wind direction, its strength together with an indication of both cloud cover and visibility are easy to record. These are possibly the most essential things to be keeping an eye on in the field and should be second nature to anyone interested in birds who spends time outdoors. Any birding log book should include them.

If you are at all unhappy with the complications of observing the weather and condition of the sky, then leave it until you may develop an interest and treat the following as a source of reference, available as and when you may need it. After all, the birds are the most important thing to record initially.

Wind Direction.

The direction of the surface wind is what is required. This is best estimated, by facing directly into the wind with the wind direction being the direction you are facing. A compass may be used in unfamiliar territory but you will soon appreciate the directions of the compass points at a regular watch-point. The degree of accuracy as indicated below is easily possible and this should ultimately be the aim.

W, WSW, SW, SSW, S, SSE, SE, ESE, E etc

Alternatively in some reporting systems available the wind direction is given in tens of degrees, measured from north (0deg), through east (90deg), south (180deg) etc.

The direction in which the clouds are moving is difficult to appreciate and may well not be the direction of the surface wind. Whilst interesting it should be disregarded relative to the recorded direction of surface winds.

There are very many well known parallels here to bird migration but most involve other factors as well – so I don't intend to quote.

Wind Speed.

The Beaufort Scale should be used as a means of estimation in the field. Various instruments are however now readily available at little cost, with which measurements can be taken in various units. In addition various reporting systems of NowCast information accessible in the field use a variety of different reporting methods. A table of comparisons is therefore included below.

Beaufort Scale

The Beaufort Scale was originally developed as a system for estimating wind strengths without the use of instruments. It was introduced in 1806 by Admiral Sir Francis Beaufort (1774-1857) of the British navy to describe wind effects on a fully rigged man-of-war sailing vessel, and it was later extended to include descriptions of effects on land features as well. It is currently still in use for this same purpose as well as to tie together various components of weather (wind strength, sea state, observable effects) into a unified picture.

The Beaufort scale is divided into a series of values, from 0 for calm winds to 12 and above for hurricanes. Each value represents a specific range and classification of wind speeds with accompanying descriptions of the effects on surface features. The criteria for wind force estimation "on land" is for assistance described here. Note that the criteria for conditions at sea is different.

Force:	Description:	Condition (on land):	Wind Speed (mph):
0	Calm	Smoke rises vertically	0
1	Light air	Smoke drifts	1-3
2	Light breeze	Leaves rustle; vane moved by wind	4-7
3	Gentle breeze	Leaves in constant motion; light flag extend	8-12
4	Moderate breeze	Raises duct and loose paper; small branches move	13-18
5	Fresh breeze	Small trees sway; crested wavelets on inland water	19-24
6	Strong gale	Large branches in motion; whistling in telegraph	25-31
7	Moderate gale	Whole trees in motion	32-38
8	Gale	Breaks twigs off trees; impedes walking	39-46
9	Strong gale	Slight structural damage to buildings	47-54
10	Whole gale	Large branches broken; some trees uprooted	55-63
11	Storm	Large trees uprooted	64-72
12	Hurricane	Widespread damage occurs	73+

Comparison of other recording methods with Beaufort-values:

Wind Force:		Average Wind Speed:			
Beaufort:	Name:	m/s:	km/h:	Knots:	miles/h:
0	Calm	0-0.2	< 1	< 1	<1
1	Light air	0.3-1.5	1-5	1-3	1-3
2	Light breeze	1.6-3.3	6-11	4-6	4-7
3	Gentle breeze	3.4-5.4	12-19	7-10	8-12
4	Moderate breeze	5.5-7.9	20-28	11-16	13-18
5	Fresh breeze	8.0-10.7	29-38	17-21	19-24
6	Strong breeze	10.8-13.8	39-49	22-27	25-31
7	Near gale	13.9-17.1	50-61	28-33	32-38
8	Gale	17.2-20.7	62-74	34-40	39-46
9	Strong gale	20.8-24.4	75-88	41-47	47-54
10	Storm	24.5-28.4	89-102	48-55	55-63
11	Violent storm	28.5-32.6	103-117	56-63	64-74
12	Hurricane	>= 32.7	>= 118	>= 64	>=75

Wind speeds measured professionally at official observing stations for the various forecasts etc are taken by various types of anemometer. All are mounted on masts at a standard height of 10m. So we cant hope to comply with this!!

With experience of all weathers in the hills and in the field at the right time of year, it really is surprising just how bad conditions need to be, to really stop the vis! In balance so long as the wind is not too strong, it really does add character to the day, especially in relation to the abysmal and dreaded flat calm.

A Windy Day

Here is the bird description text only, from a typical report of a very windy day (06-10-2004):

Basic wind conditions were:

Wind: initially SW F4 @ 0530hr, remaining similar until 0750 when WSW (upper wind W) F5 with gusts to F7, then gradually swinging W F5 sometimes 6 and gusting F7 and remaining similar, but with base speed increasing.

The cloud cover was initially deep and dark cumulus sp combining into a strato ceiling, but later on it began to clear and become much brighter. So initially it was a very poor morning after heavy overnight rain but rapidly improving later on.

An atrocious morning for the watchers with frequent heavy rain squalls and constant buffeting, blasting and banging from the wind. Without the wave wall and its upward arching roof shield of horizontal weather, to snuggle under and behind, this watch would not have been possible.

Here is the bird report:

Late up and feeling poorly this morning after dental work yesterday afternoon, ultimately leading to a very slow breakfast and late arrival this morning. However upon arrival and opposite to what was expected it was immediately apparent that a big move of pipits and also of wading birds was already in place with quiet obviously much already being missed! Once at the watchpoint, pipits in abundance could be seen at all ranges, with the majority going strong and high S and SW. Another stream going SE but lower was coming out of the Worth basin was moving in front of us below the embankment. The manner of movement and obvious strength of the birds was at total difference to the contour hugging, struggling and weak flight of the birds seen and frequently described in the recent past. After we had been counting and astounded for c 40 mins. we were even more astounded to receive a telephone call from BS to say that he had the mips also flooding through above Queensbury. The first binocular exploration of the sky above Airedale revealed two groups of Golden Plover, going west, twisting and turning in the very strong wind frequently flashing white and gold as they turned, under part up, and back. Two Redshank were also seen more or less immediately, going the same way. A very obvious "wader day" in addition to the pipits. During our visit at least ten groups of Golden Plover, (most of these were moving at a height of just above or below our northern horizon skyline, which would put them at a flight level of c 1400ft asl. There may well have been a lower movement in addition which we may not have been able to see.) were seen going west, more Redshank, along with several singles and small groups the more expected Snipe. Two small groups of Lapwing passed south. In addition two groups of, what must remain as wader sp totalling, seven were also seen. It was quite soon noted that finches and thrushes of previous days, had more or less dropped out of the race, with only a few being seen on the move. Shelduck and Cormorant were also on the move and despite the conditions were much higher than expected. Whilst a few birds were seen moving south and west to the west of us, owing to the predominating initial conditions we had no alternative but to shelter behind the wall in one way or another. Due to this we could, for much of the time only watch the skies in a half sphere from NW ~ N ~ SE and again as birds were moving at all ranges with something in virtually ever scope full. Only those we could identify were counted and half or the sky was not watched anyway, so total number of birds seen on the move as counted would again be very low. Most of the activity had come to an end by 1015 as the conditions were improving.

Without doubt most of the movement we could see today was to our east and this may well have been related to the much poorer conditions out over the Pennine Hills to our west, both to see things in and for the birds also to be moving.

Brian's comments: Heavy movement of Mipits over Queensbury this morning in strong winds and heavy rain showers. Push started at 0720 and by 0830 had cut down to a trickle. All birds were moving due S even in the heavy rain. Unable to do a count as I was unfortunately at work. Largest group -15.

Often and a bit contrary to the above, as the wind picks up, species like the Meadow Pipit do fly lower, hugging the contours and concentrating in the hollows, valleys and troughs. We know that this sometimes puts them out of visual range, over the slightly lower lands here from our watchpoint. Whereas lighter

wind conditions on the right days support the massive broad front pipit movements on “Big Days”, often with pipits moving at all ranges that the eyes and scope can see. These magnificent days really DO happen, usually once or twice a year – be there!!

But on a less pleasant note– just try pouring coffee from a flask in F7 – 8 conditions. If you can manage that, then try to drink it, without giving every one else downwind a taste..... in fact any form of fluid goes exactly the same way!!!!

Clouds.

Estimating Cloud Cover.

The unit of measure is the OKTA (an eighth).

Cloud Cover: in oktas 0 - 9 (where 0 = none / 1 - 8 in 1/8ths / and 9 = whole sky obscured).

Observing Cloud Cover Amounts.

In making the observation it is necessary to stand in a location which affords an uninterrupted view of the whole sky, or as much of it as you are able to see. Migration watching stations by definition should comply with this. All cloud amounts are determined by estimation. To make an estimate for the whole sky at once requires practice and is rather difficult at first. It may be more convenient to imagine the sky divided into quadrants by two arcs drawn at right angles through the zenith. Each quadrant represents two-eighths of the sky. By estimating the number of eighths of cloud in each quadrant then the amount of cloud for the whole sky is obtained simply by adding the amounts estimated for the separate quadrants.

See comparisons with other methods below -- these methods are provided for comparison and assistance only as some systems of reporting use them and they are helpful initially to appreciate the definition of the unit and estimation of “oktas”:

Comparisons to other reporting methods for Sky Cover

Abbreviation	Meaning	Total Amount of Layer in Oktas
SKC or CLR	Clear	0
FEW_	Few	1/8 - 2/8
SCT	Scattered	3/8 - 4/8
BKN	Broken	5/8 - 7/8
OVC	Overcast	8/8
OBS	Sky Obscured	9 (value recorded)

2. Any layer amount less than 1/8 is reported as FEW.

Cloud Height.

Ranges of Cloud Height.

Clouds can be encountered at all levels in the atmosphere ranging from sea level to as high as 18,300 m (60,000 feet) in the tropics, 13,700 m (45,000 feet) in temperate latitudes, and 7,600 m (25,000 feet) in the polar regions. By convention that part of the atmosphere in which clouds are usually found has been divided vertically into three ranges of altitude - high, middle, and low. Each range of altitude is defined by the levels at which clouds of certain types occur most frequently. The ranges overlap, and their limits vary with latitude. The approximate heights of the limits are as follows:

The main cloud types that occur with bases in the three ranges are as follows:

None: No cloud

High: (bases above 6km or 20000ft)

Cirrus

Cirrocumulus

Cirrostratus

Middle: (bases at 2-6km, approx. 6500 - 20000ft)

Altostratus

Altostratus (often extends into high range)

Nimbostratus (base is in low range, and top usually extends into the high range)

Low: (bases below 2km, approx. 6500ft)

Stratocumulus

Stratus (base may be on the ground).

Cumulus (bases are in low range, but tops may reach into middle and high Cumulonimbus range)

Scud / Fractus / Pannus.

Definition: banks of wind blown cloud occurring as a distinct yet fragmented layer below and separate from other clouds or attached to them. This, in the hills, is often down to ground level but may be well above, in swiftly moving wind driven banks and swirls with clear air up to the cloud base proper and in between.

In the Pennines at our site, this is very often down to ground level, in swiftly moving wind driven banks and swirls with clear air up to the cloud base proper and in between. For at least two recent years the big pipit movements have co-coincided at least for the first part of the morning with these conditions with major bird Movements being actually intermingled with the scud and cloud base. So don't be put off, just get out at dawn, what ever its like and give it a try – that's the only way!

Cloudbase Height.

Often difficult to estimate, but when low it can be related to the heights of nearby or even distant hills in terms of height above sea level. Another way to approximate is to determine the type of cloud relative to the ranges and types sequence above. To avoid confusion cloud base heights are often measured in feet and dependant on the source are sometimes taken as a distance from the altitude of the ground at where they are measured. This confusion should be avoided by clearly stating your datum reference ie asl etc.

A low cloudbase, overhead here in the hills, but of constant height over the lower land is always of interest and especially when its not too high above you. In these conditions moving birds are trapped between the cloudbase and the land and sometimes, to quote thrush flood as an example, the birds are just so many and so near, that you feel as if you could reach out and catch them as they zee-ek and see-ep, past you totally oblivious. Swallows are some of the best, shearing low as if under the trypods and almost between the legs! If you are in the base of a col, with only a small visible gap when viewed from afar, with birds on the move, then again beware of the "bird strike" possibility.

Contrailing.

These are lines of cloud that have formed following the passage of a jet aircraft, from the water vapour emitted by the engines. The length of time that contrails last in the sky, give an indication of and depend on conditions in the sky at that altitude. If the air at that level is dry and relatively warm, the trails fade very quickly as they evaporate. If the air is very cold, water droplets freeze into ice, trails become very persistent and can last for many hours as an extensive network in the sky. These warm / cold conditions sometimes tend to reflect in subtle ways the conditions below and at the surface (or vice versa). If present I always tend to record them as an indicator even though they are far too high to affect the birds directly.

Fog and Mist.

As mist and especially fog are really no more than low cloud, I will include them here but with definitions described under the heading "visibility". Radar studies in the 1950's have shown that whilst migrating birds do fly through cloud, that when it is present and low, many either hug the cloudbase, and if not too high, contour the tops. Foggy mornings and the absolute bird-less silence in it contribute to some of my most soul destroying vis-less experiences. However, exactly the opposite on very rare occasions, with some of my most evocative memories related to visible migration, being on top of the fog (horrendous stuff really), coming from days without cloudbase, with the whole of Airedale, out over Bradford and beyond being shrouded with a solid layer of fog appearing just as lying snow in brilliant sun below me, with just the high hill tops here, sticking out. If you are just above the fog line in these conditions then watch out, again you really are in danger of "bird strike" with the bird traffic at that flight level magnetically

guided to the visible land as if to an island in the sea. These magical mornings don't happen often but when they do and at the right time of year..... It is of course when first looking out of the window at c0500hrs very easy when seeing fog, just to roll over and have another few hours sleep, completely oblivious to whats going on up there. How do you know what's going to be going on up there at c1500ft and how do you know its going to happen? The answer is, you don't and you've just got to jolly well get out there to give it a try and find out. Good luck!!

Cloud Atlas.

For those interested in learning the appreciation of identification of the different cloud species, the most complete, yet concise guide I have found to date is: WEATHER by Storm Dunlop in the Collins Gem series 1999. ISBN 0 00 472272-8. My copy was only £4-99. This guide will fit in the pocket (or vis bag) and is very good in the field.

Alternatively, check out the following cloud atlas web sites – which, whilst excellent at home – are obviously no good in the field:

Identification of Cloud Species.

Personal Cloud Atlas.

Identification of LOW, MEDIUM and HIGH Cloud Types

<http://www.sunpoint.net/~jpoutiai/lowclouds.html>

CloudWatchEurope 2000: Cloudtypes

<http://www.met.rdg.ac.uk/~brugge/cloudwatch/cloudtypes.html>

College of Earth and Mineral Sciences

Meteo 437 Cloud Atlas

<http://www.ems.psu.edu/%7EIno/Meteo437/atlas.html>

Cloudman.com

<http://www.cloudman.com/>

The Cool Weather Co

A Very Good Section on Clouds.

The Cloud Atlas is very useful:

<http://www.coolweather.co.uk>

If anyone finds any additional, good Cloud Atlas web sites. Please do let me know.

Visibility.

A schedule of known distance "visibility markers" should be determined at the outset of the season with distances as the methodology below to ensure uniformity of recording from session to session and across the stations. These should be easy to measure from a map (but see below for GPS method). With a map on very clear days in the hills, it very soon becomes a shock to determine just how far you really can see when conditions are right. For instance there are locations near here, from where on a very clear day you can see Blackpool Tower, Ribble Estuary / Irish Sea, Snowden, Darwen Tower, the Lakeland Hills, York Minster, Humber Bridge (and beyond), Cleveland Hills, Lincolnshire Wolds and more.....

Visibility and Recording / Observing Visibility.

Visibility is defined as the greatest distance at which a dark object of suitably large dimension can be seen (landmark, hill, building structure, island etc.) and identified when observed against a background of sky or fog. In the case of night observations, ditto that could be seen and identified if the general illumination were raised to the normal daylight level. It should be emphasised that the criterion of identifying a known object should be used, whether it be seen through haze, mist or in clear conditions, i.e. just as the birds would navigate to it. Some conditions that may reduce the visibility in the atmosphere are fog, mist, haze, smoke, snow, moderate or heavy rain and blowing spray.

At land stations where there are almost always a number of objects or landscape features at known distances from the station that can be used as "visibility markers." The visibility is then estimated by

noting the most distant of these objects that is visible in the various directions and it is surprising how this can vary. It is appreciated that visibility will vary in the various directions but the maximum (at least) should be recorded and if salient, which it nearly always is, the minimum as well. There has to be an "excuse" for no birds, or the masses! A schedule of known distance "visibility markers" should be determined at the outset of the season as referred to above.

When clear, the unit of measure should be the km ie. 50km. If it is foggy and you can only see less than 2km, then it would be acceptable to use metres, ie 300m etc. Remember it is the maximum value that you should record.

A very useful piece of equipment to assist with the appreciation of visibility is the GPS (Global Positioning System). If you pre programme the grid references, of all your critical visibility markers, then, where ever you are you can instantly read off their distance away from any watchpoint you might be at, and thus confirm the current visibility. This eliminates all of the map measuring work necessary to arrive at your schedule! Very impressive in the field!! The GPS also has many other uses in connection with this interest, two of which are instant positional grid references and sunrise / sunset times – see below.

The following definitions relative to visibility are in common use:

Fog:	Visibility below 1km (1000m).
Mist:	Visibility 1km(1000m) or more.
Haze:	Still permits but reduces visibility. It consists of very very small particles of smoke or dust that reduce the visibility horizontally. It generally reduces contrast and subdues colours.

Once initiated to the build up of distant and nearer horizons, you will never leave them alone as not only are they essential to determine the visibility, but if you are watching with others, they are absolutely essential to be able to describe to others whereabouts in the sky you are seeing your birds, so they can also get an instant fix on them. For example if you were to shout out "over Buckden Pike", that wouldn't mean that the birds were really over Buckden Pike (some 50km away), but that, that was where they appeared in the sky. This system really works, is one of the first principals of birding expanded and does enhance the morning, with the team all working in the same direction. Most importantly you all need to know the horizon for it to work. With the vis watching, here in the hills with extensive open horizons, almost certainly two pairs of eyes, that know what they are doing, in different directions, produce twice as many birds – we have I think just about managed to prove that as one person cant look everywhere at once. LEARN THE HORIZON AND LANDSCAPE FEATURES THAT YOU SEE!!

Vertical Visibility.

Used in conditions of shallow surface fog or mists, difficult to measure but in these conditions it is useful to record whether the open sky (or middle, high cloud etc) is visible when looking vertically. You will soon find that this makes a big difference when migration watching, or listening as the case may be! Shallow rolling fogs are to be hoped for, whilst the deep, dark and wet ones should be shunned. (Read the paragraph on Fog and Mist above).

Sunrise and Cloudbase.

Up here in the Pennines, the sunrise tells us a lot. If the tip and ball is seen rising far to the east, often below our current cloudbase we know that the sky and weather is clear out beyond the eastern plane of Yorkshire, the east coast and way out into the North Sea. As many of our autumn and winter birds originate or have originated from these NNE ~ SSE directions this is very valuable information. It really is surprising how many times the rising sun comes up like this, visible for a short while only and then to disappear for good above and behind the cloud base and mass either over the land or over the Pennines. The Visible Migration photo logo shows just such a scenario with the apparent gap between the eastern horizon and cloudbase being no more than the visual diameter of the sun! In the various seasons it is sometimes possible to forecast what species will arrive and over-fly later in the morning with knowledge of these better conditions beyond our Pennine cloudbase. A low cloudbase over head, with a clear sky out beyond often means that anything that is moving, is below it, having possibly reduced height to avoid it, and is more likely to be picked up visually on flyover. An other point of interest is that with the clear air below the cloudbase, birds that are approaching and from a great distance can see our cols and gaps between the hills and quite possibly head for them – If you were a bird, would you take the easiest

option? The same can work for birds from the north-west and north but without the assistance from the sun in forecasting. It is of course as we all know not always the better conditions that induce movement of birds inland.

Sunrise times are available on the internet from a variety of sources, but you usually want the info when you are out in the field. I have found that the most convenient source of this info is from the GPS, it is exact for your position and available at the push of a button. I suppose all out door enthusiasts now possess one but, if you haven't got one yet, it is basic equipment here in the hills and time to invest! Don't bother with the ones that have the road maps embedded, which are expensive, just a basic one with the sunrise / sunset feature is all you want. Not an advert but try a Garmin GPS 12, its worked for me for the last five / six years.

Precipitation.

Rain and Drizzle.

Nothing much to say here, rain is rain and drizzle is drizzle, but this is how it should be referred to.

Drizzle: (Raindrops smaller than 0.5mm in diameter)
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Light drizzle: (DL)	Visibility more than 1km (1000m)
Medium drizzle: (DM)	Visibility between 500m and 1km (1000m)
Heavy drizzle: (DH)	Visibility less than 500m

Rain: (Raindrops are above 0.5mm in diameter)
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Light rain: (RL)	0.5mm or less / hour.	Individual drops easily seen.
Moderate Rain: (RM)	0.5 – 4mm / hour.	Individual drops not easily seen.
Heavy rain: (RH)	More than 4mm / hour.	Rain falls in sheets.

RSL= Rain Showers light

RSM= Rain Showers moderate

T = Thunderstorm

FR=Freezing rain

Showers and Thunderstorms are also encountered at times as is freezing rain.

Essential to find a watchpoint that has some degree of shelter from the rain, as to draw stumps at the onset of rain, is definitely not the thing to do! Here we have the wave wall some 1.25m high which when the wind and rain is from the prevailing direction, west – you can open your deck chair and shelter for long periods in comfort with the wind blown elements arching and roofing, high over head. In these conditions its just amazing to see from your dryness how the birds which often don't stop, have to struggle with the elements – especially the pipits, you wouldn't think it but they really are hardy when the bricks are down. Some of our most exciting mornings have been just such, watching them, group after group (sometimes in light rain and quite strong wind), shear across the wind, flying sideways, not to mention the rocket upwards due to the wind blast over the wave wall – an aircraft would loose its wings!!!!

Snow, Sleet and Hail.

Again nothing much to say here except that a depth of the un-drifted snow is interesting, as is whether it is totally covering the habitat used by the birds and how the birds are reacting – or if they have gone.

Sleet

SL= Snow light, M, H etc.

SSL= Snow showers light.

SSM=Snow showers moderate.

Temperature.

As might be expected, just use degrees centigrade. All temperatures used in weather forecasting are shade temperatures. So keep the sensor out of the sun. In addition all air temperature readings should be taken at 1.25m above ground. All quoted temperatures apply to this height. Some usually very obvious, warm / cold parallels to visible bird movements here, so don't intend to expand.

The tightening grip of a freeze should be watched for, especially the time when the lowland waters become unavailable. These conditions in winter (now not so frequent!) often induce big visible moves to the furthest extent of the species migratory limit. Watch also the Continental temperature and snow charts, for things like rapidly advancing and complete snow cover, or a freeze of the Baltic as these in due course will improve the vis, often dramatically, the problem is to get the timing right.

On a more humorous and cold note??, ice rind round the coffee cups, disabled fingers like bunches of bananas, slurred speech / hypothermia setting in, rock hard, biscuits and frosted hair is just about the limit!

A more serious note refers to any item of equipment that has a liquid crystal display (LCD). These are often damaged by freezing temperatures – so do check out the instructions before taking them into the field in these conditions.

Dewpoint.

Just as with the surface temperature, dewpoint is quoted in degrees centigrade. It gives some indication of the humidity of the atmosphere. In simplistic terms the closer the dewpoint is to surface temperature, the more humid the air. As dewpoint approaches and becomes equal to surface temperature, the more moist it becomes until saturation occurs (dewpoint = surface temperature). This is often an indication of rain, impending rain, fog and the like. Some other points of interest to a migration counter are firstly that a dawn observation will tend to show a higher humidity than one at midday, with the dewpoint nearly always falling away from the surface temperature as the morning progresses. The dewpoint is at most humid = to surface temperature and as the air becomes more dry, then it falls away below the surface temperature. The same rule applies when the temperature is below freezing, with the dewpoint always = to or colder than the temperature. The standard path of the dewpoint as the morning progresses forms an interesting parallel to bird movement, which should not be discounted. If you are unable to observe it yourself, readings are available from several sources at standard locations, which at least give an indication of what is afoot.

The most noticeable thing to the dedicated early morning migration counter is the sudden fall of the drenching dew in mid / later autumn which totally disables optics, saturates notebooks, coats and even hair! Nothing is more exasperating, when "birds" are approaching in dark early light after dawn to be disabled like this especially when trying to grab your first Fieldfares from the Mistles, or worse still, when you hear your first approaching "tue" of the autumn!

Barometric Pressure.

Barometric pressure is measured in millibars (mb) or alternatively the more modern unit of hectopascals (hPA). 1mb = 1hPA so there isn't much to learn here.

Here a barometer complete with barograph is essential. No need to have it in the field so long as you don't live too far away from your watchpoint – in fact to move it, once it is set up is counter productive as the pressure varies with altitude. A variety of weather stations are available at little cost, with this and various other sensors as well. If not familiar with the term, a barograph is a means of taking comparative readings over say 24 hours and to be able to see those readings in graph form, related to time. From this you can not only see the current now-cast reading but are able to gain the absolutely essential knowledge as to whether the pressure is "ridging" or "troughing" and if overnight or at work, when this has happened. Also you can usually see when fronts have gone over. Also knowledge of the barometric tendency, together with rise or fall conditions are essential to the "thinking" migration counter. When conditions are on the change, it is essential to get out, especially if the previous conditions have been longstanding in any respect. As with the different weathers come the different birds and this is often quite dramatic, especially in conditions of ridge or trough – just how can the birds tell!!!

A very important point when considering the purchase of a barometer / barograph is that some of the cheaper ones, whilst they go up and down, are not sensitive enough to report the fine detail of the

pressure whilst it is actually on the change. This time lag and smoothing effect often makes all the difference to what you can appreciate – I learnt by experience!

Just in case you listen to the “shipping forecast” (what! in the hills) this is what the pressure tendencies quoted mean:

Description of Pressure Tendency: (measured over a three hour period)
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Steady	Less than 0.1mb
Rising or Falling Slowly	0.1 – 1.5mb
Rising or Falling	1.6 – 3.5mb
Rising or Falling Quickly	3.6 – 6.0mb
Rising or Falling Very Rapidly	Over 6.0mb

National Weather Situation.

No need to record the national situation as there are lots of very detailed sources now available on the internet for free. These if relevant can be downloaded and saved later in the day, but don't leave it too long as the weather moves on just like the birds and the info you need will only be available for a short while. Archive sources are available on national information, but if you want the more detailed stuff, no good!

What is a must however is to check out the various charts forecasting the various elements on the night before your field trip, to determine a prognosis both on the bird possibilities and to safeguard yourself. Its handy to know if it's to be a six coat morning along with thermals or if much less is ok! Also good practice to check out the NowCast info, just before venturing out!! Just so you know!!

Things to look for are many, but a must is to assess potential for arrivals that might overfly either coast and come straight inland. You then have an idea as to whether its worth hanging around. Weather originating from Iceland / Greenland as well as Scandinavian source should be watched for in autumn. Thrushes from the north-east sometimes come straight inland as possibly do Snow and Lapland Buntings from the north-west, this judging by the correlation of arrivals on the west coast as compared to ours on vis passing through at upland sites. None of these species of birds on the first push, when the migratory urge is strong, hang around, and are most usually straight through, often on the same weather system (or a complementary one) to which they originated.

Good Migration Counting!!

Dave Barker [Visible Migration] © March 2005 v01.01.01 {draft and text only version}