

## **Understanding Visible Migration**

### **Part 1 – Falls, raptors and seabirds**

In this short series of articles I hope to try and explain some of the basics of that mysterious birding subject - visible migration. How and why does it work? What are the best places to witness it and how are its many contradictions explained? But before focussing on visible migration of passerines, I think it will be useful to think first about the falls of nocturnal migrants – probably what most of us think of as “true” migration, and then set the scene for the next article by taking a look at the two best known types of visible migration – raptor migration and seawatching.

#### **Exciting falls**

We all know the basic principles behind falls of autumn migrants on the east coast and the northern isles: nocturnal migrants set off from Scandinavia soon after dusk heading south, encounter easterly cross winds and are pushed towards Britain. If they're unfortunate enough to encounter a rainy or misty front over the North Sea, then their navigation is severely affected and the birds are brought down to sea level. Their survival now becomes a matter of chance. Will they have the energy and the luck to make landfall on a northern isle or on the east coast? Unless conditions are particularly adverse, most of the larger migrants such as the thrushes probably make it, but the journey for smaller birds such as the warblers, crests and chats with their smaller resources of fat is more challenging.

As if by magic the following morning those that found land feed up and rest, bringing life to cliff slopes, patches of bushes and sheltered gulleys along the east coast. This is when the patch workers are primed and on the hunt. Their senses strain to hear every call and spot every tail dip or wing flick. In Britain, Fair Isle probably has the highest “concentrating factor” for birds caught out over the open sea and heading for the first land that they see – it has only 3 square miles to search for a first for Britain, compared to 88,745 sq miles in the whole of Britain. There's still no guarantee that the bird will be found, although the lack of woodland and scrub on Fair Isle further increases your chance of finding the migrants that do arrive.

Lower concentrations occur on coastal headlands such as Fife Ness and Flamborough, partly because migrants have more options as to where to make landfall, and also because they can quickly filter inland where they are much harder to find. In the summer of 1985 I worked as warden on the Isle of Noss, Shetland, and witnessed a wonderful set of falls from mid-August onwards during a period of south-easterlies with intermittent rain. Noss lies on the eastern seaboard of the Shetland Isles, and by getting out immediately after the rain stopped, I had a few hours to find birds before they island-hopped – first to Bressay, then Shetland Mainland where they are much harder to find. Icterine Warbler, Wryneck, Blyth's Reed Warbler and two Thrush Nightingales revealed themselves over the course of 10 days. The key factor in finding these birds was that the almost complete lack of shrubby cover on the island made the birds visible, and/or concentrated them in the few nettle beds around the dwellings where they were relatively easy to see. Shetland is one of the few places I've been where I've felt that looking for migrants wasn't like looking for proverbial needles in hay stacks.

These conditions bring many rare birds to Britain's shores, and fuel our love of searching for migrants from Shetland to the Scillies. But part of me always wonders about the fate of these off

course migrants. In the finer weather of August and September you can imagine that many “lost” migrants are able to re-orientate and find their way to their intended destinations. But as the autumn progresses and day length shortens, the weather deteriorates and food gets harder to find, how many of the long-stayers that make up the late autumn fare of birders actually survive?

And all this raises one big question. Why do birds migrate by night? Why not migrate by day when you can see where you’re going? What drives chats, warblers and crests to change their diurnal habits and undertake the hazards of a night-time journey? Well, evolutionary theory tells us that the advantages must outweigh the disadvantages, and migration researchers list the following physiological, navigational, energy-saving and survival benefits of nocturnal migration (Berthold 2001): cooler night-time temperatures, calmer air masses, the time saving advantages of feeding by day and migrating by night and predator avoidance. In his superb book on the *Migration Ecology of Birds*, Ian Newton (2008) when addressing the question of nocturnal vs. diurnal migration in passerines states that “*the various advantages of night flying are so obvious that it is hard to imagine why some birds migrate primarily by day*”. But there is little general agreement over which of these benefits could have brought about the evolution of nocturnal migration. Surely a very powerful force must have been required to make the first warblers and chats start to move by night? Maybe we can shed some light on this question by looking at birds that migrate by day.

### **Migrating by day**

Our understanding of visible migration is increasing with every year, thanks to the new insights provided by the ability to rapidly report and summarise migration counts on the internet. Communication between visible migration watchers across Britain and Europe has been revolutionised by the migration website Trektellen [www.trektellen.org](http://www.trektellen.org) designed by Gerard Troost and Jethro Waanders. Observers from Georgia to the Outer Hebrides enter their migration counts (usually on the same day as the watch itself) providing an almost instant idea of what birds are on the move and where, as well as a massive archive of past counts. High quality interpretation tools such as graphs, maps and count summaries then make it easy to ask questions about the timing and volume of migration, the species involved and so on. To date in Britain over 34,000 visible migration and seawatch counts have been submitted to Trektellen from almost 250 sites, totalling over 85,000 hours of timed observations!

*Migration watch points in Britain with >1,000 hours of timed counts submitted to Trektellen*

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Anglers CP, W Yorks	1,100
Barmston, E Yorks	2,061
Filey Brigg, E Yorks	2,941
Flamborough, E Yorks	4,814
Hunstanton Cliffs	1,306
Long Nab, N Yorks	2,141
Oxenhope, W Yorks	3,698
Scolt Head, Norfolk	8,431
Spurn Point, E Yorks	9,860
Sunk Island E Yorks	6,088
Thorpeness Suffolk	1,217

Whitburn, Durham	7,945
Winter Hill, Lancs	1,700

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These counts provide a unique country wide insight into diurnal migration. Information that was previously only accessible in a multitude of regional bird reports often published several years after the event can now be pulled together in minutes. The counts cannot be considered to provide an objective picture of migration across the country because, for example, there are more sites on the east coast, some sites have better coverage than others etc. But never the less, real patterns are emerging, and I hope to show some of these in this short series of articles.

The great thing about visible migration from a bird watcher's perspective is that if birds are moving by day – then provided they are not high in the heavens, then they can be seen by anyone armed with binoculars or telescope. So rather than inferring what birds have been migrating overnight by what turns up in the bushes at dawn, you can actually watch the birds in the very act of migration. And so we can enjoy the magic of migration in action. As the years have passed, my desire to find Thrush Nightingales and Blyth's Reed Warblers has waned, but my appetite for connecting with migration in action has grown ever stronger. Every migration journey is a minor miracle of endeavour and navigation, each worthy of an Olympic medal. But I'd rather watch Usain Bolt in the act of running the 100m final than see him standing around receiving his medal "after the event". So it is that I, and a growing band of "vismig" watchers have become tuned to observing visible migration rather than turning up for the medals ceremony for nocturnal migrants whose achievements cannot be witnessed. Whilst Eastern Crowned Warblers will always take the Gold Medal for most birders, the real magic of bird migration for me is connecting, however briefly, with the amazing journeys that can be seen in action.



***Pale-bellied Brent Geese on their way from Canada to Northern Ireland, Rubha Ardvule, S Uist.***

***Photo: John Kemp***

And visible migration can be witnessed across the country, it is not the preserve of east coast headlands and remote islands. I have been enthralled by flocks of moving thrushes and finches in the valleys of the Peak District, Pale-bellied Brent Geese, Great Northern Divers and Sabine's Gulls off the coast of Islay in westerly gales, Whooper Swans and Woodpigeons on high pressure days in the Angus Glens and Meadow Pipits, Kestrels and Marsh Harriers following the peninsula at Spurn on sunny days in September. Further afield I've watched swifts, Black Kites and Cuckoos passing through Alpine cols, flocks of Great White Pelicans and Steppe Eagles over the desert coast of N Sinai, Honey Buzzards starting their northward spring journey to Europe over Cameroonian rainforests, and Woodpigeons, Little Gulls and Common Cranes on their way to Finland braving Baltic snow showers on the Latvian coast in April. Whatever the species and location, good vismig days are like having a front seat at the Olympics.



***Great Northern Diver in summer plumage. Rubha Ardvule, South Uist. Photo: John Kemp***

### **Raptor migration**

Raptor migration has long fascinated birdwatchers across the world because of the spectacle of a wide range of species concentrated on a narrow front at bottle necks such as Falsterbo (Sweden), Gibraltar (Spain) the Bosphorus (Turkey) and the now intensively watched Batumi in Georgia. The diurnal migration of raptors is easily explained. The larger species need thermals to gain height so that they can cross great distances by soaring and gliding rather than flapping – which is not their strong point. The lack of thermals over the sea makes this a major barrier to them, so they simply follow the land. You can look at any map of the world and easily predict where the raptor migration bottle-necks will occur, the most striking probably being the isthmus of Panama between North America and South America. A key feature of all the above locations is that they have huge “catchment” areas to the north of them from which the south-bound migrants are drawn – guaranteeing lots of birds. By looking at the distribution of species within these land masses you can easily predict which ones are likely to occur at a particular migration watch point. Some of the best

raptor migration that I've seen was on the island of Kythira, just off the southern end of the Peloponnese peninsula in Greece - the last point before departure across the Mediterranean to Crete. A line of cliffs providing updraughts acted like a magnet to the migrating raptors, and sitting in the sun on top of these cliffs gave exceptionally close views of migrating Booted and Short-toed Eagles, Honey Buzzards, Hobbies and harriers, not to mention a good sprinkling of herons and egrets. Next time you head for the sun, take a good look at the map and see if you can find your own raptor funnel.



***A migrating Osprey at Anglers Country Park, W Yorks , mobbed by 2 Jackdaws.***

***Photo: Paul Meredith***

Unfortunately, raptors rarely provide a migration spectacle in Britain as we only have a few truly migratory species and they have small populations. Never the less, because of their very rarity, raptors can spice up any migration watch. Records from watch points contributing to the Trektellen visible migration website [www.trektellen.org](http://www.trektellen.org) since 2005, although not comprehensive, provide a flavour of what to expect and where. The best sites are on the south and east coast, with Dungeness, Scolt Head (Norfolk) and Spurn dominating the lists of maximum day counts. Never the less, these bear no comparison with those at continental sites! Of the true migrants the Marsh Harrier is the most commonly recorded, although only Scolt Head, Dungeness and Spurn have had day totals of 10 or more birds, and these came on only 14 such days in total. Maximum day counts of Honey Buzzard at all sites have only exceeded one bird on twelve days, with the maximum being seven >E at Scolt Head on 13<sup>th</sup> Sept 2008, the year of the last Honey Buzzard invasion, when 27 birds were recorded at vismig sites. Other scarce species include increasing numbers of Ospreys (318 records in total, maximum count 6 at Spurn on 19<sup>th</sup> August 2011) and Montagu's Harrier (total 45 records, maximum two birds). It can be difficult to disentangle resident from migrant Hobbies (total 707 individuals), but the majority of records again come from Spurn and Dungeness where they are likely to be true migrants.



***Migrating Sparrowhawk, De Horde, Netherlands. Photo: Arjan Boele***

The three most commonly recorded British raptors during 2005-2013 were Kestrel (1,702 records in total, of which 833 came from Spurn, including a staggering maximum count of 54 on 15<sup>th</sup> September 2010 ( a British record?) , Sparrowhawk (2,958 individuals, many of which were at Dungeness including the maximum of 52 there on 23<sup>rd</sup> August 2008) and Common Buzzard (2,083 individuals, maximum 70 >S at Spurn on 3<sup>rd</sup> Sept 2010). Most of these counts probably involve dispersing young birds rather than true migrants, although some of the high counts of Buzzards and Kestrels suggest that some continental immigration may be involved. It is notable that raptor migration in the UK is an early autumn phenomenon, starting in mid August and peaking by mid September. So if you're seeing raptors pass over you at this time of year, don't assume they're locals! There is still much to learn about raptor migration in Britain, and with the populations and ranges of some species on the increase, more great days to be had.

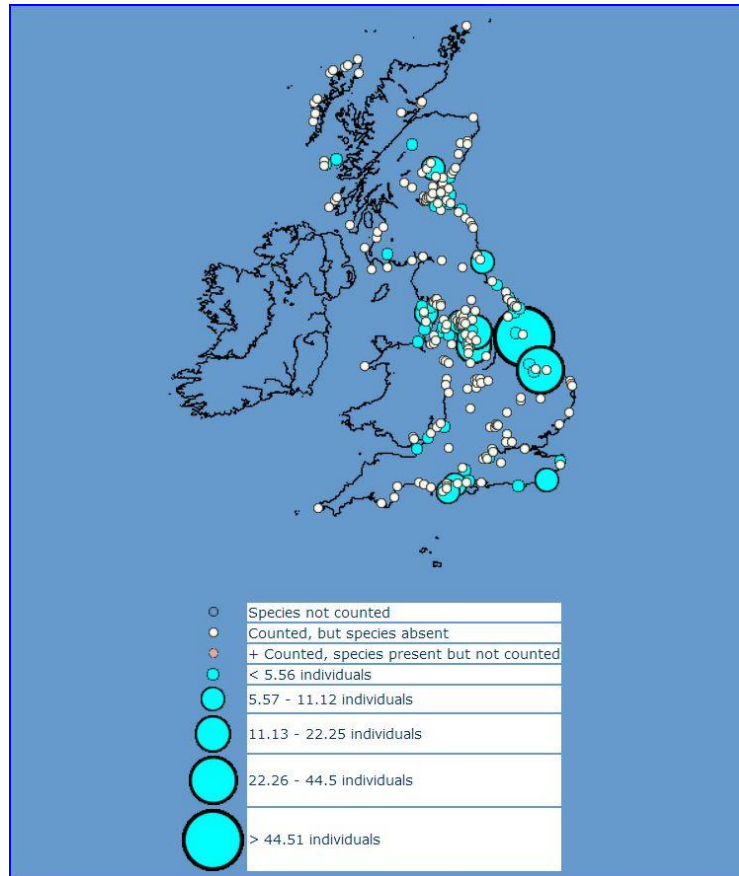


***Migrating Kestrel, De Horde, Netherlands. Photo: Arjan Boele***

*Raptors numbers recorded on Trektellen Britain 2005-2013*

<b>Species</b>	<b>Total birds 2005-13</b>	<b>Max day count</b>	<b>Dir'n</b>	<b>Site</b>	<b>Date</b>
Honey Buzzard	99	7	>E	Scolt Head	13/09/2008
Black Kite	15	1		Several sites	
Red Kite	274	7	>N	Filey	21/04/2013
Marsh Harrier	1,993	23	>W	Scolt Head Christchurch	05/08/2006
Hen Harrier	244	5	>W	Harbour	09/11/2011
Pallid Harrier	2	1		Spurn and Blackdog	
Montagu's Harrier	38	2		Two sites	
Sparrowhawk	2,958	52	>W	Dungeness	23/08/2008
Common Buzzard	2,083	70	>S	Spurn	03/09/2010
Rough-legged Buzzard	31	4	1 >S, 3 in off	Spurn	17/10/2010
Osprey	287	6	>S	Spurn	19/08/2011
Kestrel	1,702	54	>S	Spurn	15/09/2010
Merlin	828	9	>W	Durlston	14/10/2006
Hobby	670	7	>W	Dungeness	28/08/2010





***Distribution of Ospreys recorded at migration sites on Trektellen, GB 2005-2013 (n = 287)***



***Migrating Honey Buzzards, De Horde, Netherland, showing the characteristic wing shape and pigeon-like heads . Photo: Arjan Boele***



## Seawatching



***A lone Gannet at Rubha Ardvule, South Uist captures the atmosphere of a seawatch on a stormy day. Photo: John Kemp***

Seawatching couldn't be more different to raptor watching! Not for the feint hearted, it depends on adverse weather to push strong-flying seabirds close inshore. Onshore gales and violent squally showers of rain and hail seem to work best, but don't always make for comfortable birding! The best seawatching sites are usually on headlands which "interrupt" the otherwise steady flight-line of seabirds moving parallel to the coast, causing them to temporarily re-orientate with some hard flapping into a headwind. The catchment area for a seawatching site is potentially a huge sector of ocean – the stronger the wind the larger the number of birds potentially pushed towards the shore. But headlands work better if they have a long "leading-line" of coast leading up to them to guide birds to towards them. I always imagine that seabirds are flying roughly at right angles to the wind, like sailing ships tacking, taking advantage of the updraughts from the waves (so-called dynamic soaring) and the shelter provided by the troughs between the waves. So a wind direction more or less at right angles to the coast should generate a stream of seabirds, all happily cruising along at a safe distance from the alien coastline using the wind to their advantage – until they "hit" your headland. However, if the coast leading up to the headland is convoluted and broken, such as along the west coast of Scotland, this appears to disrupt the movement – perhaps the birds simply sit out the bad weather, resulting in fewer birds at the next headland. It seems that the longer and smoother the leading line of coast the more birds that get into the groove, generating a steady stream of birds to be identified and counted. Flamborough Head is a good example of this having the dual benefits of sticking out about 8 km into the sea and lying at the head of a 60 km long leading line of featureless coast running northwards from Spurn. Note that many seabirds on the east coast

of Britain move in a northerly direction, particularly the more pelagic species such as the shearwaters. This is thought to be the result of birds reorientating after having previously been displaced into the southern North Sea by strong northerly winds.



***Kittiwake and Gannet, Rubha Ardvule, S Uist. The dark and stormy seas of the west coast of Scotland make a great back drop for seawatching. Photo: John Kemp***

The importance of the coastal leading line was made very obvious to me when I spent two years on the Inner Hebridean island of Tiree. Having moved there from Islay, I had fixed ideas on where the best seawatching sites should be. A quick look at the map suggested the best options would be Ceann a'Mhara or Hough Point on the west side of the island. As well as being difficult to pronounce, access to Ceann a'Mhara ("ken a vara") was difficult, so Hough Point was the place I headed for when the shipping forecast for Malin promised the magical SW 6 veering W or NW 7-8 overnight.



***Four autumn seawatching sites on the island of Tiree, Argyll. Image: Google Earth.***

Despite being low-lying and exposed to the worst of the weather, it had to be worth a few soakings. But it never failed to disappoint, the only highlights being Storm Petrels feeding in the surf on the north side of the peninsula! It seemed that the shearwaters were further out to sea, so my attention switched to site 3 – Balevullin. This was much better, the seabirds were generally closer in, but despite huge numbers of Manxies (almost uncountable thousands passing by from the nearby breeding colony on Rhum), ne'er a Balearic among them could I pick out, and the hoped for Sabine's and Leach's that I had grown accustomed to at Frenchman's Rocks on Islay didn't materialise. It still seemed as if the Sooties and Fulmars were passing further out to sea. Following lots of looking at maps and lots of head-scratching I wondered whether the leading line of the north coast of Tiree (and the adjacent island of Coll) might act as a leading line if north westerly winds pushed birds onto the coast. Shortly before my two years on Tiree was up, I finally made the bold decision to go to Aird rather than Balevullin. It was immediately clear that the seabirds were closer in and flying slower than at Balevullin – better views and more time to identify them. It wasn't long before my first Tiree Leach's Petrel skimmed along the wave tops and I was kicking myself for not trying this site earlier. The leading line from the east end of Coll to the Aird on Tiree is over 30 km long, and this was the key ingredient, and it would seem the Aird headland deflected birds away from the coast such that they didn't also pass Balevullin only a few kilometres to its west.



***The leading line of the north coasts of Coll & Tiree pushes birds westwards, bypassing sites on the west coast of Tiree. Image: Google Earth.***

Never the less, despite all this talk of leading lines and smooth coastlines, not all sites follow these rules, and there are occasions when it seems that the more a site sticks out into the sea, the more seabirds it gets e.g. Cape Clear in Ireland. I think there are days when specific weather systems combine to produce something akin to seabird “falls”, when mist, rain or fronts bring birds close to shore, sometimes with dramatic results. Martin Scott and Tristan ap Rheinallt witnessed one such event at the Butt of Lewis on 8<sup>th</sup> September 2007 when a staggering 7, 114 Great Shearwaters (and one Cory’s!) passed north westwards out of the Minch.

Their notes on the day are worth repeating *“Highest ever count of Great Shearwaters in Scottish waters - previous highest 186! Movement of Great Shearwaters was more or less continuous, with the three largest flocks holding 630, 596, and 479 birds. The birds were not particularly distant and many gave extremely good views. Also 1 darkish Fulmar, at least 2 Killer Whales, 1 Sunfish and 1 poss Minke. Seawatching was not our main aim for the day, but by sheer coincidence, we arrived at the Butt this morning when low cloud/fog/drizzle was just starting to clear and move away offshore. For most of the day, a band of low cloud (apparently a fog bank) could be seen out at sea, and conditions were generally quite hazy. The BBC weather chart shows that the southern boundary of the mass of cloud (which was oriented roughly WNW-ESE) extended more or less in a straight line across the whole of the north of Scotland, just clipping the Butt. We speculate that the murky conditions and light SW-lies of the last few days caused birds to drift into the Minch, and then to take advantage of the narrow band of clear sky to funnel out past the N end of Lewis today - this being the only exit from the northern Minch to offer reasonable visibility. Inevitably, the question arises as to whether we could have counted the same birds more than once, but as far as we could make out all the birds were heading straight out in a north-westerly direction to the open sea.”*





***Top birds on any seawatch: Leach's Petrel, Corsewall Point, Dumfries & Galloway (Photo: Gavin Chambers) and Sooty Shearwater, Rubha Ardvule, S Uist (Photo: John Kemp).***

One of the great things about seawatching is that there is always a variety of other species on show. Flocks of ducks and waders from July onwards, Pink-footed and Brent Geese in September and Whooper Swans and Great Northern Divers in October. Identifying birds at sea is a particular challenge, and familiarity with your site and your species seems to be the key to success.



***Whimbrels from Iceland passing Rubha Ardvule, South Uist 17th August 2013.  
Photo: John Kemp.***

Seawatching seems to be a sport for the particularly obsessive and hardy birder! The number of man hours spent at British headlands is truly impressive (see table above). The rewards can be great – since 2010 Brett Richards at Flamborough has notched up Black Browed Albatross, Fea’s Petrel and Baikal Teal. But on the pages of *Trektellen* Brett has summarised many a lonely vigil on the great white cape as “dire” or “awful”!

Tiree taught me the general rule for all visible migration sites – there has to be some form of leading line or barrier to first to “catch” and then to guide birds past a watch point to make getting out there for dawn and standing in one place for two or three hours worthwhile! There is little doubt that migrants are passing overland and along our coasts on a broad front, but if the geography isn’t right, then the numbers passing may be so small as to be undetectable. In the next article I’ll be exploring how geography creates the right conditions for visible migration watching. If you’re reading this before the end of August and you want to learn more about almost any aspect of migration, be it seawatching, vismigging or ringing, you may still be able to sign up for the Spurn Migration Festival 5<sup>th</sup>-7<sup>th</sup> September – guaranteed birds to satisfy all tastes. To find out more, visit [www.spurnbirdobservatory.co.uk](http://www.spurnbirdobservatory.co.uk)

**References:**

- Berthold, P. 2001. *Bird Migration. A general survey*. 2<sup>nd</sup> edn., OUP, Oxford.  
Newton, I. 2008. *The Migration Ecology of Birds*. Academic Press, London.