Understanding Visible Migration – Part 2, Clive McKay

(Original text for article published by Birdwatch magazine, October 2015)

Last time round I wrote about the importance of barriers, leading lines and catchment areas to migrating raptors and seabirds. This time round I'm going to concentrate on passerines, and hopefully show that the basic principles of where and when to connect with migrating flocks of our diurnal migrants are much the same.

Luckily for me, one of my first vismigging sorties left a lasting impression from which I've never really recovered. Following the guidance of Keith Clarkson who put "vismig" on the map (and coined the term!) in Sheffield in the late 1970s, I looked at the map of my local patch in the Peak District near Sheffield and reckoned that the upper end of Ewden Valley on the high tops should funnel migrants in the way that Keith had shown for his regular spot– Redmires reservoir.

So on 30th September 1980 David Marshall and I made the big commitment to trudge up to the headwaters of the Ewden Valley for dawn. The three mile walk up MIckleden Beck (soon to become famous as the site of Britain's first Marmora's Warbler) didn't hold much promise – we were walking into thick fog shrouding the tops. We parked ourselves in a heathery gulley which we knew well from afternoon raptor watches looking east into the wide basin of the Ewden Valley – but all we could see was mist – until a female Goshawk got as big a surprise as we did when it cruised past at head height over the heather.

Sun breaking through the mist as Dave Marshall searches for migrants, Mickleden Beck, dawn 29 September 1981. Photo: Clive McKay

But as far as visible migration was concerned, we'd got it all wrong. The only birds that would get funnelled westwards by the Ewden Valley would be incoming winter thrushes and finches, but the end of September was too early for these. However, our luck was in. The mist began to clear and as the sun made a milky appearance, we heard the calls of Meadow Pipits, Pied Wagtails and Linnets behind us in the mist – the presence of Mipits on the 1,500' plateau was no surprise, but Linnets and Pied Wags was definitely odd. Giving up on Ewden, we retraced our steps back towards the valley of Mickleden Beck – which cuts sharply into the northern side of the Derwent moors in a north-south direction. The broad valley narrows into a steep sided clough as it reaches the moorland plateau – a perfect funnel for to direct birds past any waiting observers mad enough to be up there at dawn. Check out grid reference SK192975 on the "Grab-a-Grid Reference" website to see a map and a satellite image of the area.

And so it proved for Dave and I on that day. As the mist cleared fully, a trickle of birds became a veritable rush. Over the next few hours we saw over 1,286 birds of 25 species. The majority were Meadow Pipits (796) but the variety of species was extraordinary. Not for their rarity, but for the fact that we knew this area well from hundreds of visits at other times of day, and we had never seen anything like this – Swallows, Sand and House Martins, Grey and Pied Wagtails, an amazing 34 Blue Tits and one Coal Tit, plus a nice mix of thrushes and finches, including the first Redwing and Fieldfare of the autumn, along with 100 Chaffinch, 16 Brambling, 47 Siskins, 81 Linnets, a Twite, 42 Lesser Redpolls and 5 Reed Buntings. A Merlin chasing the Mipits wouldn't have been a locally bred bird in those days. What a feast! This made the long pre-dawn walk well worth it, and I have to say, with the benefit of hindsight, was much more exciting than the Marmora's Warbler twitch just down the valley two years later.

These birds were heading "blindly", or so it seemed, straight over some of the bleakest moors that the Peak District has to offer. By 10 am, the usual time that any early rising birders might normally get up to the top of the beck, the movement came to a fairly abrupt end – apart from a few hirundines which continued to trickle through. Never the less, the early morning determined passage involving such a range of species couldn't be a one off – and I've been enthralled by visible migration on and off ever since.

Barriers and leading lines and catchment areas

Mickleden Beck has the three key characteristics of any good vismig site. Firstly, the moorland edge of the Peak District and the southern Pennines acts as a barrier to non-moorland species – if they can they'd rather follow the edge than go straight over the top. This creates a concentrated flow of birds – like the water flowing around a large rock in a river. Secondly, the steeply incised valley of Mickleden offers a potential "pass" through the hills visible from afar. This acts as a leading line for the birds – opting for what appears to be the path of least resistance. The leading line effect is enhanced by the presence of trees most of the way along the valley bottom – perhaps luring those 34 Blue Tits further up the valley till it was too late to turn back. How many of us have made similarly wrong decisions when navigating through unfamiliar territory? In addition, the bottom and sides of the valley would be well sheltered from the winds passing over the summit hills. This may be particularly important to birds of the tops such as the Meadow Pipits, taking advantage of the local geography to make their journey easier. Thirdly, Mickleden has a large potential catchment area to its north for non-moorland birds heading south, as the Pennines stick out eastwards at this point,

interrupting the flow of farmland and woodland birds which have been “in-habitat” from Halifax southwards.

These are the likely features that help to make Mickleden worth a visit. In addition, from an observers point of view, the final key ingredient is the classic way that the head of valley narrows gently into a narrow steep sided funnel as the ground rises – guaranteeing that most birds will follow this route, bringing the birds wonderfully close to the watcher., This makes identification a whole lot easier! Even with years of experience, passerine visible migrants still need to be relatively close to be identified with certainty – and if they’re within ear-shot that helps a lot too!

There aren’t many Mickledens in Britain – if you know of one please let me know. For me it remains a Holy Grail among vismig sites – requiring an expeditionary spirit to get up there, but great ambitions have often been dampened by mist and drizzle. No surprise then that, considering it potential, it is one of the poorest watched vismig sites on the Trektellen visible migration website (last count made as long ago as 1984!), but despite this it holds a top 30 UK Redwing vismig count (7,470 on 6th October 1984), a top 10 Tree Pipit count (32 on 25th August 1982, and a top 5 count for… those 34 Blue Tits!

Mountain passes

If we scale up from the Peak District to the Alps, and from Mickleden Beck to the Rhone Valley then we enter a whole new world for visible migration. If you’re a finch trying to get through the Alps you might be tempted to follow the valley of the Rhone southwards from Lake Geneva in Switzerland, and then head south west towards Champery along the Val-d'Illiez – a steady climb through wooded valleys to over 1,000m. But your southward journey is blocked by a massive mountain wall topped by glaciers – better follow the valley! But it climbs and climbs until a distant dip in the horizon reveals a possible way “over the top” – the Col de Bretolet on the Swiss-French border. At 1923 m above sea level, this is the lowest point (!) through this section of the Alps, and it is a route followed by hundreds of thousands of migrating birds every autumn. It is the site of a spectacular bird observatory – perched on a knife-edge ridge between mountain peaks reaching up to 3,000m. The view is spectacular, and the Swiss Ornithological Society has manned the observatory there since 1959. When I visited in late July 2012, the seasonal wardens Marco Thoma and Sarah Althaus gave me a very warm welcome. They co-ordinate the volunteer team of ringers who erect the mist-nets (on 50’ poles) on the 1st of August, and take them down again some time in October when the first snows prohibit further ringing. The nets are checked every hour, day and night and Marco and Sarah are responsible for ringing and measuring every bird that is caught - to ensure consistency of measurements! Wow! The Col de Bretolet is one of the few places in the world where high-flying nocturnal migrants can be caught on migration in the middle of the night.

With the emphasis very much on ringing, the team don’t have much time for vismigging, although good numbers of raptors pass through the site, along with countless passerines. I wasn’t expecting much vismig when I climbed up to the obs on 28th July. But from the valley bottoms it was soon apparent that Swifts were passing along the valley sides in large numbers. As I climbed nearer to the Col I could see the Swifts towering up in tight panicky spirals until they reached sufficient altitude to cross the pass. You know it’s hard going when even the Swifts are struggling. At the summit it was fantastic to be at swift migration height and to see flock after flock skimming over the pass at head height. My count of 4,935 Swifts and 1 Alpine Swift was a huge under-estimate as I was only

counting part of the time as I climbed breathlessly up to the summit. Marco and Sarah confirmed that the numbers of Swifts that day was unusually high, and they were interested to hear that July is the peak month for Swift passage at another great bird observatory – Spurn Point in East Yorkshire. I have never witnessed the Spurn Swift migration spectacular –highest day count 21,000 on 4th July 2010, but I was sure that these birds in an Alpine pass were part of a similar phenomenon, and it was strange to be thinking of the narrow neck at Spurn here in the flowery meadows of Switzerland. In the past ten years Spurn has recorded 30 counts of over 3,000 Swifts in the late June/early July movement, and with these have come a top selection of rare Swifts – two Pallids, three Pacifics, four Alpines and one Little - an unparalleled set of records. These Swift surges remain a bit of a mystery, the time of year is clearly wrong for emigration of breeding birds.

By rights I wasn't expecting any vismig at the Col de Bretolet in late July, so the Swifts were a real bonus. Few other birds were on the move, a few local dispersing Nutcrackers and Rock Buntings were among the first birds to be ringed that season. On my second visit on 30th July there were no Swifts on the move, and single Honey Buzzards and Cuckoos could have been locals. The Cuckoo was making heavy weather of the climb to the summit, and rested for a while in a bush before going over the top. The drive shown by this bird suggested that it was a migrant determined to head south. That this could have been so was brought home to me when I looked at the BTO's Cuckoo blog after my return home. The sat-tagged Cuckoo "Chris" ringed in Suffolk that year had already arrived in the Italian Alps a week earlier!

The Col de Bretolet – the grassy dip on the horizon) - only another 1,000 m to climb!
Photo: Clive McKay

Migrating Common Swift in the mist and snow, Col de Bretolet, 28 July 2012 (Clive McKay)

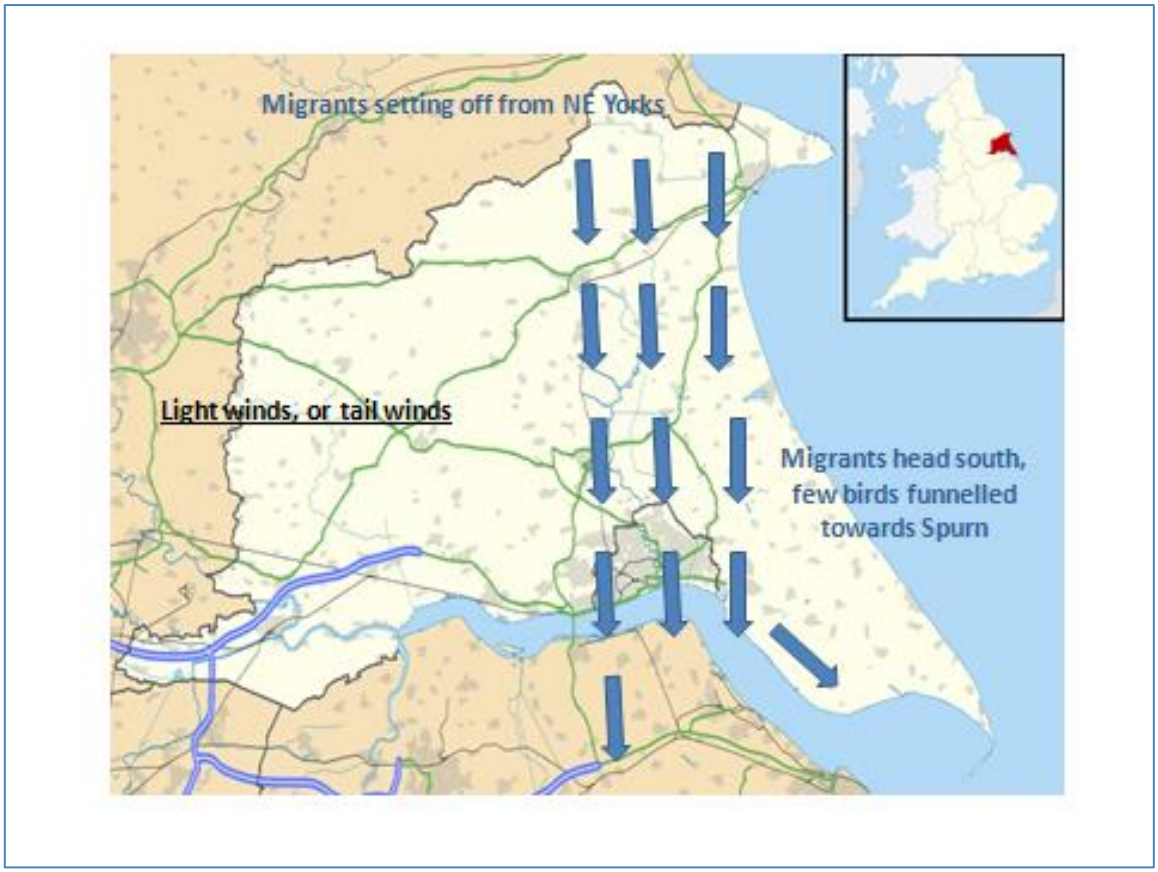
Panicky Swifts crossing the Col de Bretolet ridge at 1930 m, 28 July 2012
Photo: Clive McKay

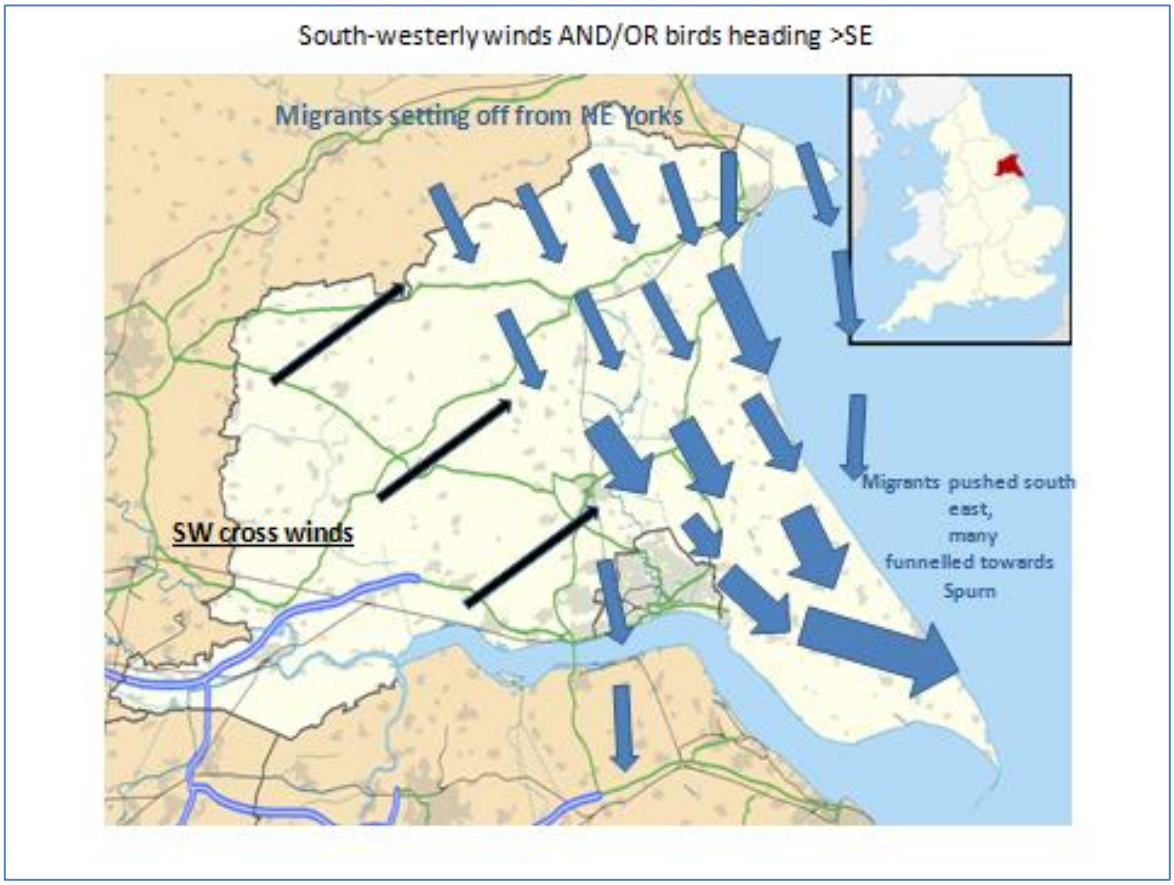
The wonder of Spurn

In a British context, Spurn Point is probably our best all round migration site – having its share of seawatching, falls of nocturnal migrants and passages of visible migrants – including ducks and waders along the coast, skuas and terns passing out of the Humber after crossing from the west coast in the spring, and of course large numbers of south-bound land birds and raptors in the autumn. The vismig geography of Spurn is so unique you just couldn't make it up! The coastline of East Yorkshire acts as a barrier to land birds heading south along the coast, concentrating birds southwards towards Spurn. But in addition to this, another barrier captures birds heading south further inland – the north shore of the Humber. As if this wasn't good enough, these two features converge on the narrowest of narrow peninsulas – the "narrow neck" at the northern end of Spurn. How long the narrow neck will remain with us is anybody's guess, so my recommendation is to make the most of it while it's still there!

Like the narrow clough at the head of Mickleden beck, the "narrows" at Spurn bring birds as close as you could wish for, but the scale of movement at Spurn is in a different league. The two-sided funnel effect of the converging coasts acts like a migration engine, pushing more and more birds towards the point. To make this migration engine work best, all that is needed is south-westerly winds, which push more birds towards the coast. Perhaps a cross wind also encourages birds arriving at the north shore of the Humber not to cross the Humber (crossing open water could be risky if the wind is strong) and instead to alter their course and follow the shoreline towards Spurn. The figures below compare how I think migrants setting off from points north of Spurn move south in light winds and how south-westerly wind pushes more birds towards the point.

The variety of species and number of birds caught up by this funnelling effect can be phenomenal, but it should be borne in mind that these south-bound movements are primarily of birds from British origins – swifts, hirundines, pipits, wagtails, finches, Pink-footed Geese and so on. Note that non-British migrants such as incoming Fieldfares, Redwings and Bramblings occur at Spurn under very different weather conditions – usually classic fall conditions, with the newly arrived birds soon leaving the peninsula in a west or northwest direction heading inland, and are not part of the "regular" visible migration that I'm discussing here.





The Spurn "migration funnel" under differing wind directions

The table of record autumn vismig counts for Spurn of south bound diurnal migrants gives a flavour of the sorts of numbers involved and the times of year at which the different species are on the move. Observer coverage at Spurn is as good as at any site in the country, and nowhere are the counts of visible migration so systematic. Species marked with an asterisk are record British counts on Trektellen – from 6 Ospreys and Cuckoos to 20,000+ Swifts, Swallows and Meadow Pipits!

Record autumn vismig counts of commoner south bound landbirds at Spurn since 2006 (data from www.trektellen.org, courtesy of Spurn Bird Observatory)

Species	Day total	Date
Whooper Swan*	160	20 Oct 2013
Pink-footed Goose	9,175	28 Sep 2008
Marsh Harrier	16	15 Sep 2010
Common Buzzard*	70	3 Sep 2010
Osprey*	6	19 Aug 2011
Kestrel*	54	15 Sep2010
Cuckoo*	6	25 Jun 2008
Swift*	21,000	4 Jul 2010
Skylark	911	20 Dec 2009
Sand Martin	2,000	15 Jul 2008
Swallow	22,000	8 Sep2009
House Martin	7,000	8 Sep 2009
Tree Pipit	14	24 Sep 2012
Meadow Pipit*	20,200	13 Sep 2011
Rock Pipit	150	12 Oct 2006
flava wagtail sp. (prob. Yellow)	161	20 Aug 2011
Grey Wagtail	16	12 Sep 2008
alba wagtail (prob. Pied)	54	21 Oct 2006
Waxwing	83	14 Nov 2012
Coal Tit	4	7 Oct 2010
Blue Tit	9	26 Sep 2011
House Sparrow	51	21 Oct 2006
Tree Sparrow*	1,120	12 Oct 2007
Greenfinch	849	16 Oct 2007
Goldfinch	4,975	6 Oct 2010
Siskin	620	7 Sep 2011
Linnet	1,990	23 Sep 2011
Twite	96	2 Nov 2009
Lesser Redpoll*	502	21 Sep 2008
Crossbill	48	30 June 2012
Lapland Bunting	36	7 Oct 2010
Snow Bunting	69	9 Nov 2013
Yellowhammer	12	18 Oct 2013
Reed Bunting	90	8 Oct 2012
Corn Bunting	6	27 Sep 2012

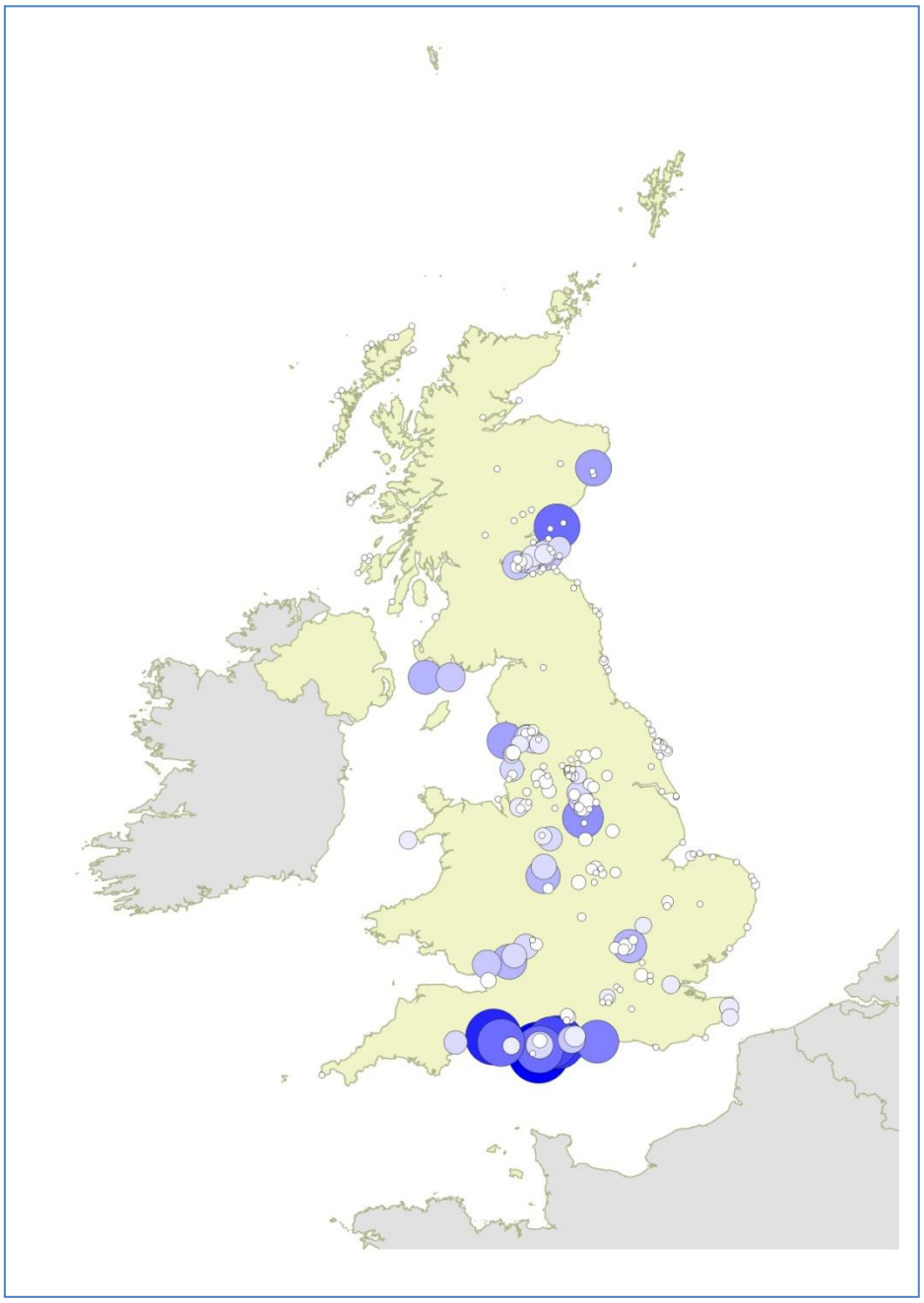
**Species marked with an asterisk are record British counts on Trektellen*

For many of these species, Spurn's counts are exceeded by those on the south coast, at sites like Durlston, Dungeness and Christchurch Harbour. The catchment area for these sites is the whole of Britain, so one would expect numbers there to be greater. And this raises an interesting question about Spurn. Why is a site on the east coast of Britain any good for visible migration at all? If birds are heading south from Scotland to S or SW England or France, why follow the east coast? Good question. This apparent anomaly is worth exploring. I think the answer is a simple one – the preferred migration track of the main species occurring at Spurn lies somewhere to the east of south, and therefore these are the very birds for which the Spurn funnel "works". We know from ringing recoveries that most British Goldfinches, Siskins and Lesser Redpolls head to SE England or the Low Countries for the winter (see the marvellous "Online Ringing Reports" on the BTO's website for more details) – so it is no surprise that they get caught up in the funnel. Conversely, Pied Wagtails follow a track from breeding areas in Scotland and the north of England to the west of south heading towards SW England and NW France for the winter. This route guides them away from the Holderness funnel, and sure enough, "alba wagtails" (i.e. unidentified Pied or White Wagtails flying over) are notable by their low numbers at Spurn. Most vismiggers at sites north of Spurn have to get used to the idea that for many species their "big days" are nearly always a fraction of what Spurn gets! But we have our small victories – and alba wags are one of them! Spurn doesn't even feature in the top 10 sites for alba wagtails on Trektellen (see table below)! What this table also shows is the main migration period for alba wagtails – late September and early October (the count at Fife Ness is exceptional, and may even have involved White rather than Pied Wagtails). Each species has its migration window – a period of roughly two weeks for most species during which 90% of the population will make their migratory journey.

Top ten record site counts for alba wagtails at visible migration watch points in Britain (from counts on Trektellen website, mostly 2006-2013)

Site	Day total	Date
Christchurch Harbour, Dorset	1,670	9 Oct 2010
Durlston NNR, Dorset	1,380	29 Sep 2013
Barton-on-Sea, Hants	1,005	10 Oct 2010
Inverkeithing, Fife	546	6 Oct 2013
Carnoustie, Angus	468	7 Oct 2010
Fife Ness, Fife	380	4 Sep 2010
Carnforth, Lancs	367	2 Oct 2010
Peterstone Gout, Gwent	265	7 Oct 2013
East Bexington, Dorset	244	7 Oct 2012
Mull of Galloway	240	13 Oct 2011
Spurn	54	21 Oct 2006

The main autumn migration route of alba wagtails is shown clearly on the map below – based on counts of over 112,000 birds on Trektellen since c.2006. The route through the centre of England to the SSW and the relative scarcity of birds at east coast sites is clearly shown.



Autumn alba wagtail passage in Britain – averages per hour (range 0 -51 per hour, larger darker dots represent more birds) data from www.trektellen.org

This illustrates another important principle in understanding visible migration - whilst the geography of a site is key to making it "work" for visible migration, a consequence of this is that most sites only "work" in one direction. So Spurn works best for birds moving SSE – whether it be in spring or autumn. For example, southward passage of Chaffinches at the Narrows in the autumn is minimal (highest count only 134 birds!) – because British Chaffinches mostly move west or SW in the autumn. But in the spring they are much commoner as visible migrants, with five counts of over

1,000 birds in the late March early April period. Why would Chaffinches be moving SE in the spring? The answer is simple – these are almost certainly continental birds returning their breeding areas after having wintered in Britain – concentrated on their way out by the Holderness funnel just like the SE bound Goldfinches in the autumn. Confirmation of this comes from ringing recoveries such as a male Chaffinch ringed at Spurn on 14 March 1991, and controlled nine days later 516 km to the east in Helgoland, N Germany.

I suspect the same applies to the large numbers of Swallows (and the frequent Red-rumped Swallows) which also pass through Spurn in the spring, except that these will be birds that have overshot their continental breeding areas and are re-orientating back SE. So what about the early July Swift movement mentioned earlier? This is still a hard one to call, but there can be little doubt that there are so many birds at Spurn because they are heading in a SE direction – what ever the reason. Could they be non-breeders or immature birds that have prospected sites in Britain and are now heading back in a leisurely fashion to the continent, Switzerland, Africa? More research needed!

The Spurn September Mipit Surge!

And finally, this brings me to a Spurn vismig conundrum that has puzzled me for some time. Ringing recoveries tell us that British Meadow Pipits head south or SSW towards northern France and Iberia for the winter – a broadly similar pattern to the Pied Wagtails mentioned above. Bearing in mind the "SE funnel" rule, why on earth should Spurn hold seven of the top 10 British migration counts of Meadow Pipit, not to mention the staggering UK record count of 20,200 >South on 13 Sep 2011, when these birds are apparently heading in the wrong direction?

The first hint of something other than stupidity on the part of the pipits comes from observations at other vismig sites in the north of England such as the well-watched Oxenhope, W Yorks – typical of an upland fringe watch point in a prime position to pick up moorland Mipits on the move. Here Mipit migration peaks in the fourth week of September, and continues well into October. By contrast the massive movement at Spurn has already passed its peak by mid September. This strongly suggests that these migration peaks come from two different populations of pipits. It seems likely that the Spurn September surge comprises pipits from the Icelandic breeding population. Iceland has a very large pipit population of several million birds, nearly all of which migrate south for the winter to Iberian winter quarters, like the British birds. However, the shortest sea-crossing from Iceland to Britain is in a south-easterly direction - making land fall at the northern tip of the Outer Hebrides, or Cape Wrath in Sutherland. I suspect it's quite important for the pipits to get their bearing right, as a small error can add hundreds of kilometres to the journey, e.g. to reach Ireland. To cut a long story short, I imagine that some/many of these Icelandic birds continue on this south-east bearing through Britain, which would of course mean that Spurn has the best geography for picking up this unusual direction of movement. To my mind this is the only satisfactory explanation for the early timing and scale of the Spurn surge. Perhaps the birds use the east coast of Britain as a navigational aid to tell them that they should be thinking about turning SSW towards Iberia?

The good news is that strong support for the Icelandic origin for the Spurn Mipits comes from ringing recoveries. Of only four autumn controls of Icelandic ringed Meadow Pipits in Britain, two were at Spurn , and both in the mid September surge period! This is not to say that every Mipit at Spurn in early September is from Iceland. There are certainly British birds caught up in the excitement as well.

I hope that by exploring some of the elements that make visible migration tick at Spurn in detail, it should now be possible for readers to coming up with your own theories and questions about the what, where, when and why of vismig. There's lots of places yet to be pioneered, and part of the fun is trying to locate the best spot. To learn more why not sign up to the Visible Migration Yahoo group this autumn, and of course new counts are submitted to the www.trektellen.org website every day, ready for you to start exploring. Next time round I'll be looking at other sites and other species in the UK, and speculating on more migration mysteries!

Acknowledgements: *Many thanks to Arjan Boele for his flight photos of migrating birds, and to Gerard Troost of Trektellen for preparing the alba wagtail map.*