

# Why? Where? When? By whom? And with what benefit?

## Aerial survey: rationale and returns



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# WHY?

**Because it is a well-established and proven technique that can offer special insights on the past**

**Valuable for discovery, research, interpretation and communication**

- .... Illustration: both for specialists and for the general public
- .... Discovery: through cropmark, soilmark and earthwork evidence
- .... Description/characterisation of known and newly discovered sites
- .... Mapping, documentation and dissemination
- .... Monitoring to assist the conservation of nationally valued assets
- .... Recording of landscapes, townscapes and industrial archaeology
- .... Expanding the database for research and interpretation: some aspects of the past in the UK are documented mainly through 'aerial' evidence

# WHERE?

Anywhere – *any* country, *any* region, *any* locality

But returns will vary according to the local geology, soils, land-use, climate and pattern of archaeological development and preservation

Worthwhile returns in *all* areas, but they will be greater, or different, in some areas compared with others

Each country and region must find its own best uses of aerial survey and remote sensing

## 'Aerial visibility' in Wales

Worthwhile returns from aerial survey can be achieved almost anywhere. But some areas, because of local conditions, will produce more than others. This is so in Wales as elsewhere.

1. Areas with rich cropmark evidence
2. Areas where cropmark evidence is less dense but still significant
3. Upland areas characterised by the good survival of earthwork evidence
4. Areas with particularly rich survivals of industrial archaeology



## WHEN TO START?

*The clever answer:*

Half a century ago! Through the analysis of 'historical' air photo archives

*The obvious answer:*

As soon as possible – it can never be too soon but could soon be too late

## HOW LONG TO CONTINUE?

20 years minimum? But there could be significant benefits within 5 years

Even after 20 years there will still be new discoveries and new insights

There will always new subjects and new questions to be investigated

# BY WHOM?

For **vertical survey**: national agencies and specialist survey firms

Might there it be possible to influence the timing of vertical surveys so as to make them more productive for archaeology?

For **exploratory and target survey**: by archaeologists themselves, or by pilot-archaeologists like René Pelegrin or Otto Braasch

Importance of good relationship with aircraft contractor and pilots

Value of training and passed-on experience

Value of a local airfield and local archaeological knowledge

# WITH WHAT BENEFITS?

Potentially vast increase in available database, for landscape and all aspects of archaeology

Better illustration and characterisation of landscape and heritage assets

Improved capacity to monitor and conserve what we value from the past

Better communication with the general public and the younger generation

Enhanced public understanding of our heritage and the need to value and protect it

More pressure on politicians and professionals to conserve and 'present' our archaeological and landscape heritage

# LIES, DAMNED LIES AND STATISTICS!

United Kingdom: same size as Romania, almost 3 times the population, with a history of 60 years of air photo development since World war II

How many staff dealing with 'aerial archaeology' in the United Kingdom?

For flying, photography and immediate post-flight processes: **about 6**

Plus about 10-15 with aerial survey as a small part of their responsibilities

For interpretation, mapping, documentation: **about 25, mainly in England**

How many hours flown each year: **about 500**, plus 100+ flown 'locally'

How many locations photographed each year: **about 6000-7500**

How many 'new' sites discovered each year: **about 500, possibly more?**

## **Aerial Survey by English Heritage in 2009**

England is a little over half the size of Romania

Hours flown: 263

Locations photographed: 2870 (excluding general landscape views)

.... Earthwork sites: 280

.... Cropmark sites: 1073

.... Archaeological and military sites: 553

.... Nationally protected monuments monitored: 964

'Score-rate' per hour: about 11

## **Aerial Survey in Wales from April 2007 to March 2010**

Wales is about one ninth the size of Romania

Hours flown: 152 (average 50 hours per year)

Locations photographed: 2593

.... Nationally protected monuments monitored: 1950

.... 'New sites' discovered: 502

.... Existing site records enhanced: 1519

'Score-rate' per hour: 17

Every hour in the air may take between three hours and several days to enter into the archaeological record as interpretations, maps, tabulations and written documentation.

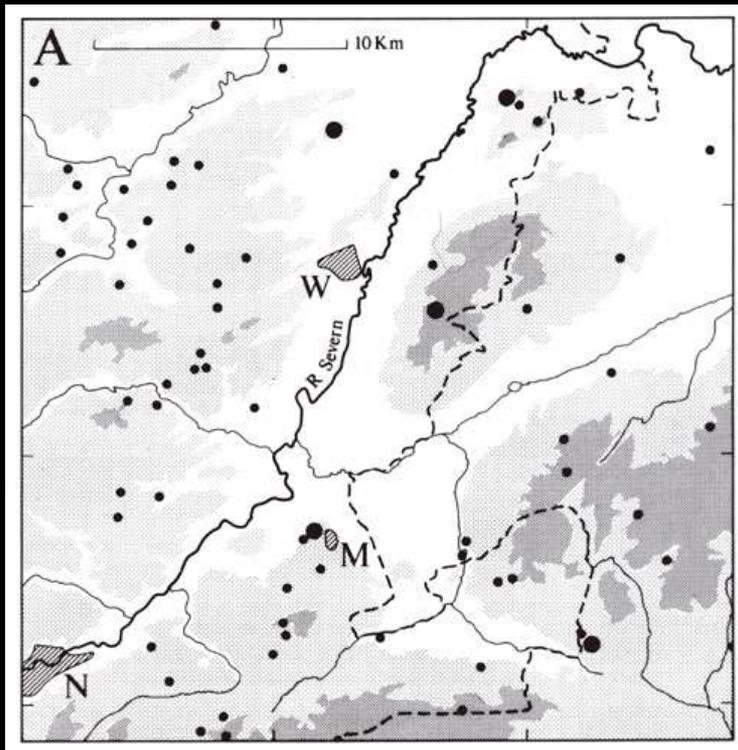
Until this has been done the photographs are just pixels in an unstructured universe.

In Wales and adjacent parts of England 20% or more of all cropmark sites recorded in any one year are new to the record. So the number of known cropmark sites is likely to double every 5 years.

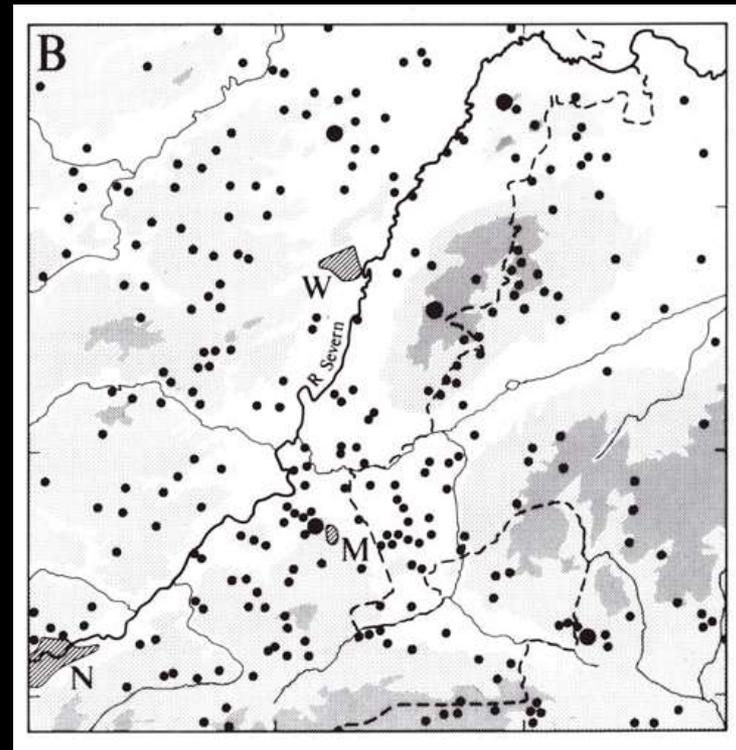
The mapping of evidence from historical and recent air photos can be enormously effective in expanding the database. In the UK the increase is rarely less than 50% and sometimes as much as 500%.

The impact of cropmark evidence can be enormous. In Britain the great majority of Neolithic field monuments are known principally from aerial evidence. Much the same applies to significant proportions of later prehistoric and Roman sites.

If you don't have cropmark evidence your archaeological speculations may be seriously defective. Air photo discoveries can transform concepts of settlement patterns based on earthwork evidence alone, as here for later prehistoric sites in part of Wales.



Earthwork evidence alone



Earthworks plus cropmarks

'Aerial evidence' tends to have a life of its own. If you try to answer specific archaeological questions framed on the basis of ground-based perspectives the answers may be very reluctant to come.

On the other hand, what you *do* see and record may pose a whole new series of questions about things that you had never envisaged investigating.

To a certain extent you should let the aerial evidence lead you where it wants to go. Don't tie yourselves entirely to ground-based speculations and expectations.

However you go about planning a programme of aerial survey, you will need to take a ***structured*** approach to what you aim to achieve.

You cannot just go into the air and hope that revelations will leap out of the ground, any more than you could excavate in a randomly chosen field and expect to recover useful archaeological information.

Try to build a pattern of aerial practice that chooses according to the circumstances from a multiplicity or 'portfolio' of target types. Then every hour of flying will produce greater long-term gains.

In Wales we tend to photograph any site of any date that doesn't positively jump out of the way. Over time, the many photographs taken 'in passing' help to create a broader and more representative picture of the country's landscape and heritage assets.

## A short list of target types in Wales

- .... General exploration, for all periods from Neolithic to Recent
- .... Photography of already-known sites, to improve the illustrative record
- .... Aerial monitoring and documenting of nationally protected monuments
- .... Earthwork sites in 'glancing' sunlight, early/late in the day and in winter
- .... Soilmark sites in autumn, winter and spring
- .... Cropmark sites in spring, summer and early autumn
- .... Sites and landscapes under snow, frost, flood and drought
- .... Buildings and building complexes of all periods, castles, abbeys, churches etc
- .... Farms, field systems and communication routes, ancient and modern
- .... Villages, towns and cities – the urban context in process of change
- .... Industrial archaeology, and industries likely to become extinct in the future
- .... Landscapes and man-made landscape features, infra-structure projects etc
- .... Photographs to assist ground-based survey, research projects or publications
- .... Etc etc etc, as opportunities offer themselves on any individual flight