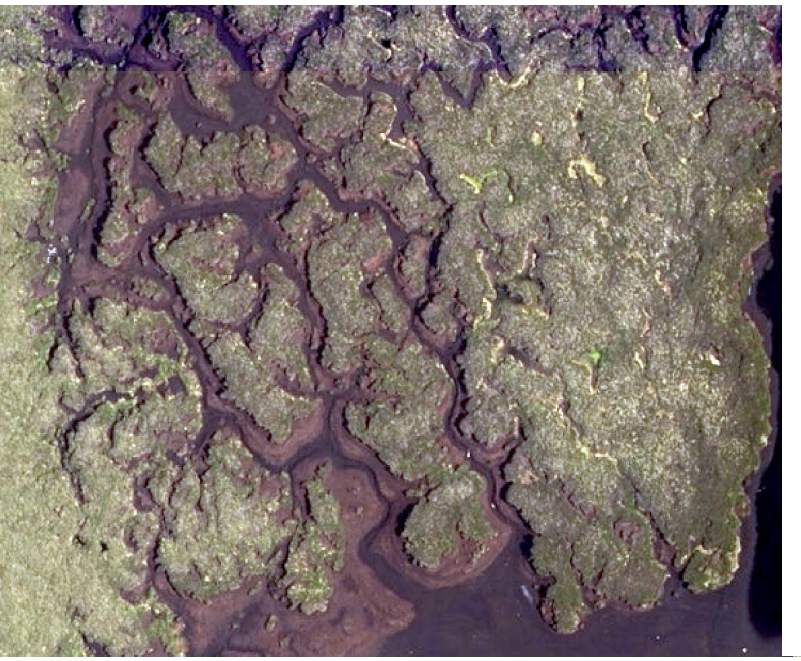
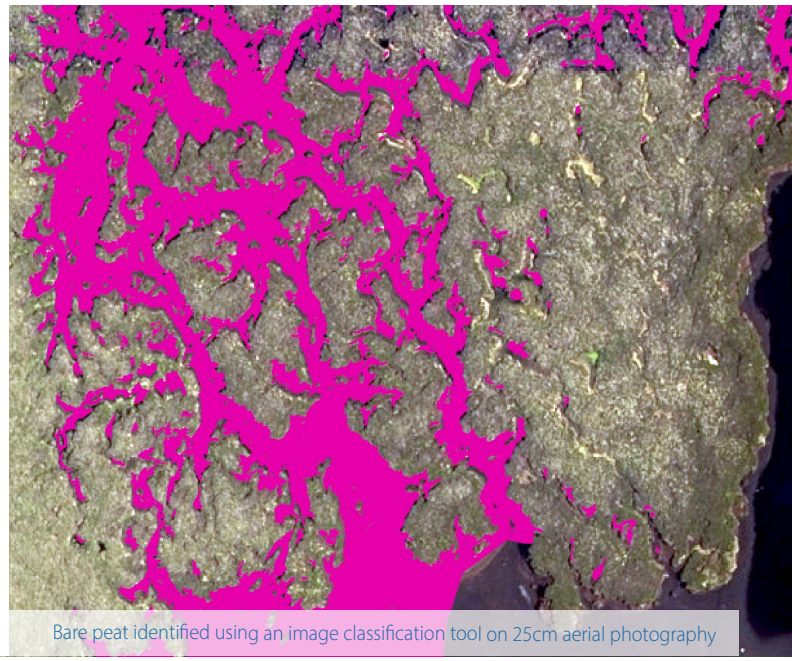
Case Study

The North Pennines National Landscape Partnership





Bare peat identified using an image classification tool on 25cm aerial photography

Client:

The North Pennines National Landscape partnership is a collaborative alliance of statutory agencies, local authorities and voluntary or community organisations which conserves and enhances the area. The staff team is hosted by Durham County Council, on behalf of the funding partners: Durham County Council, Cumberland Council, Westmorland and Furness Council, Northumberland County Council, and Defra. The team leads a wide range of work including protecting and enhancing nature and heritage, and helping people to discover, enjoy and explore the North Pennines National Landscape. The team also manages the UNESCO Global Geopark designation for the area.

North Pennines National Landscape

Industry:

Local Government

Protected Landscape Management

Product:

Aerial Photography

"The use of remote sensing data and digital approaches is revolutionising nature recovery projects worldwide, including right here in the UK. Bluesky's aerial and CIR photography, accessed through the APGB contract, now underpin our initial, highly detailed desk studies for projects before site visits by expert field staff. This approach has enhanced and improved project planning, enabled initial carbon credit estimates from the desk, and helped minimise disturbance in sensitive habitats of the protected landscape of the North Pennines."

Miles Wilson

GIS & Remote Sensing Officer, North Pennines National Landscape team

Summary:

The North Pennines National Landscape team is using Bluesky's aerial photography and 50cm Colour Infrared (CIR) photography to support the delivery of several nature recovery projects. This includes extensive peatland restoration by conducting detailed image classification, enabling the team to identify and quantify areas of bare and eroding peat. By combining Bluesky's aerial imagery with elevation data, the team has also created detailed 3D digital models of the landscape, allowing for remote exploration and enhanced visualisation of proposed restoration and nature recovery sites.

Challenge:

To support peatland restoration and other nature recovery efforts, the North Pennines National Landscape team needed access to accurate, scalable tools to analyse the current landscape and identify areas of peat erosion

Accurate analysis of peatlands also helps the team assess which sites could be eligible for the UK Peatland Code, helping secure funding for peatland restoration projects through voluntary carbon credits that can be bought by private carbon buyers looking to invest or offset their carbon emissions.

With current access to landscape wide satellite imagery, which lacked the detail needed for meaningful analysis, and their higher resolution drone data, which, while highly accurate, is more resource intensive and impractical for covering large landscapes, the team required a solution that could effectively bridge the gap between the two.

Solution:

By leveraging a combination of Bluesky's aerial photography and 50cm Colour Infrared (CIR) photography, made available through the APGB contract, these datasets enabled the team to undertake detailed supervised image classification to identify and quantify bare and eroding peat areas. This identification was crucial, informing future restoration projects and aiding the team in assessing the suitability of various sites under the UK Peatland Code. In particular, the addition of CIR photography proved invaluable because in some cases it highlighted bare peat areas more effectively than standard aerial photography.

Additionally, the team also used Bluesky's aerial photography in combination with elevation data to create 3D digital models of the North Pennines National Landscape. These enhanced visuals of the landscape aided internal project planning and were instrumental in stakeholder engagement as the landscape could be explored in detail without needing to visit the site physically. Aside from peatland restoration projects, the models have also been a valuable tool in tree planting consultations, allowing stakeholders to visualise how proposed changes, such as new tree lines or fencing, would appear within the existing landscape.

Results:

The integration of Bluesky's aerial photography and CIR photography has transformed how the North Pennines National Landscape team approaches landscape-scale restoration and nature recovery. Access to this photography through the APGB contract has significantly enhanced the efficiency of the planning process by enabling the team to carry out detailed desktop-based studies before setting foot on-site. Through this approach, the team can accurately map, classify, and analyse areas of the landscape in advance and fieldwork has now become a process of verification and ground truthing, rather than initial discovery. As a result, the team approaches each site visit armed with a better understanding of the landscape and what specific methods of restoration are required.

Moreover, the use of 3D digital models has been instrumental for stakeholder engagement. By enabling users to explore the landscape in three dimensions directly from their desktops, the models have reduced the need for on-site visits for stakeholders. This has not only saved time and resources but also made proposed restoration easier to understand, fostering clearer communication and greater transparency.

	Imagery Specification	
Resolution	**12.5cm Aerial Photography**	**50cm Colour Infrared**
Coverage	Great Britain	Great Britain
Accuracy XY	± 30cm rmse	± 60cm rmse
Formats	Include: JPG, TIFF, ECW	Include: JPG, TIFF
Standard Projection	British National Grid	British National Grid
Tile Size	1km x 1km (8,000 x 8,000 pixels)	1km x 1km (2,000 x 2,000 pixels)
Metadata	Gemini 2.3	Gemini 2.3

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