Comisiwn Brenhinol Henebion Cymru

Royal Commission on the Ancient and Historical Monuments of Wales

Borth Submerged Forest

Non Intrusive Survey

County: Ceredigion
Community: Borth
Site Name: Borth Submerged Forest
NPRN: 506500
NGR: SN60599063 (centre of extensive linear site/area)
Date of Survey: April 2010
Survey Level: 1a and 1b
Surveyed by: Deanna Groom, RCAHMW
Illustrations: Deanna Groom, RCAHMW

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1 INTRODUCTION

This report contains the results of a rapid survey undertaken whilst the forest was exposed by the lowering of the beach levels at Borth from late January to early April 2010. The exposures comprised peats containing twigs, small branches and other forest matter on their upper surface; fallen trees; root systems; and tree stumps. The alder, pine, birch, oak and hazel trees began to colonized the fenland landscape surrounding a freshwater lagoon around 5000 years ago. However, increased water logging had begun to encourage the proliferation of Sphagnum mosses by around 4700 years ago. Samples taken from the stumps and branches to the south suggest that the forest was still growing around 3100 BP, but over time the mosses built up into thick deposits of peat burying the dead trees stumps (Godwin and Newton 1938; Colyer 1977; Heyworth 1987).

2 SURVEY METHODOLOGY

2.1 Objectives

The specific objectives for the survey were to:

- to undertake a rapid reconnaissance and recording of the extent of forest within the short windows of opportunity allowed by the tides;
- to develop a coastal survey methodology to allow monitoring work to be undertaken at low cost by local community groups wishing to explore further coastal archaeology on their doorstep by involvement in the Cadw-funded Arfordir project or the Nautical Archaeology Society Training Progamme.

2.2 Methodology

A hand held DGPS unit (Garmin Etrex Venture) was used for primary position fixing. A waypoint was recorded centred over each tree stump (i.e. fallen trees lying on their sides were not recorded nor the extents of the peat deposits exposed). It was determined that second survey utilizing tracking function of the hand-held GPS and waypoints to define the edges of the peat exposures might be undertaken, however time constraints did not allow for this to be undertaken. The limits of the handheld GPS to record only 450 waypoints necessitated two phases of the survey to be undertaken over two days. Datums were established on the seaward ends of prominent groynes to allow the two datasets to be overlaid, joined and tied back into the wider landscape.

The way points recorded were downloaded to Google Earth, and converted from KML to a shapefile in ArcGIS 10. Digital photographs were taken with a Cannon EOS 450D.

The RCAHMW's recording strategies are informed by EH Understanding Historic Buildings: A Guide to Good Recording Practice 2006 and the *IFA Standard and Guidance for Nautical Archaeological recording and reconstructions 2008.* These standards have been correlated to the levels of survey activity used by the RCAHMW. The bibliographic research and fieldwork undertaken conforms to RCAHMW Levels 1a: desk based research and 1b: field observation.

3 RESULTS OF SURVEY

The survey of the tree stumps took approximately 3.5 hours over the two days targeted to span an hour either side of low spring tides. Four datum points and 630 stumps were recorded.

The positional accuracy given by the satellites for both days was +/- 7m. Nevertheless, the correspondence of the datums established on the seaward ends of the groynes (features mapped by the OS and visible on modern aerial photography) confirms a reasonable level of confidence in the distribution maps the survey generated.

The low cost of the Garmin handheld GPS and the ability to download the data to the freely-available Google Earth for viewing confirms that this methodology would provide a quick and inexpensive way for local groups to monitor exposures year-on-year via the Cadw-funded Arfordir project.

Further Reading:

Colyer, R J, 1977, The enclosure and drainage of Cors Fochno (Borth Bog) 1813-47 in Ceredigion, Vol. 8, no. 2, p. 181-192

Godwin, H and Newton, L, 1938, The submerged forest at Borth and Ynyslas, in New Phyt, 37: 333-44

Heyworth, A, 1987, Submerged Forest: A dendrological and palynological investigation; PhD thesis, University College of Wales.

ARCHIVE DEPOSITED IN THE NATIONAL MONUMENTS RECORD OF WALES

Archive Collection Name:

Maritime Project: Borth Submerged Forest

Digital resources:

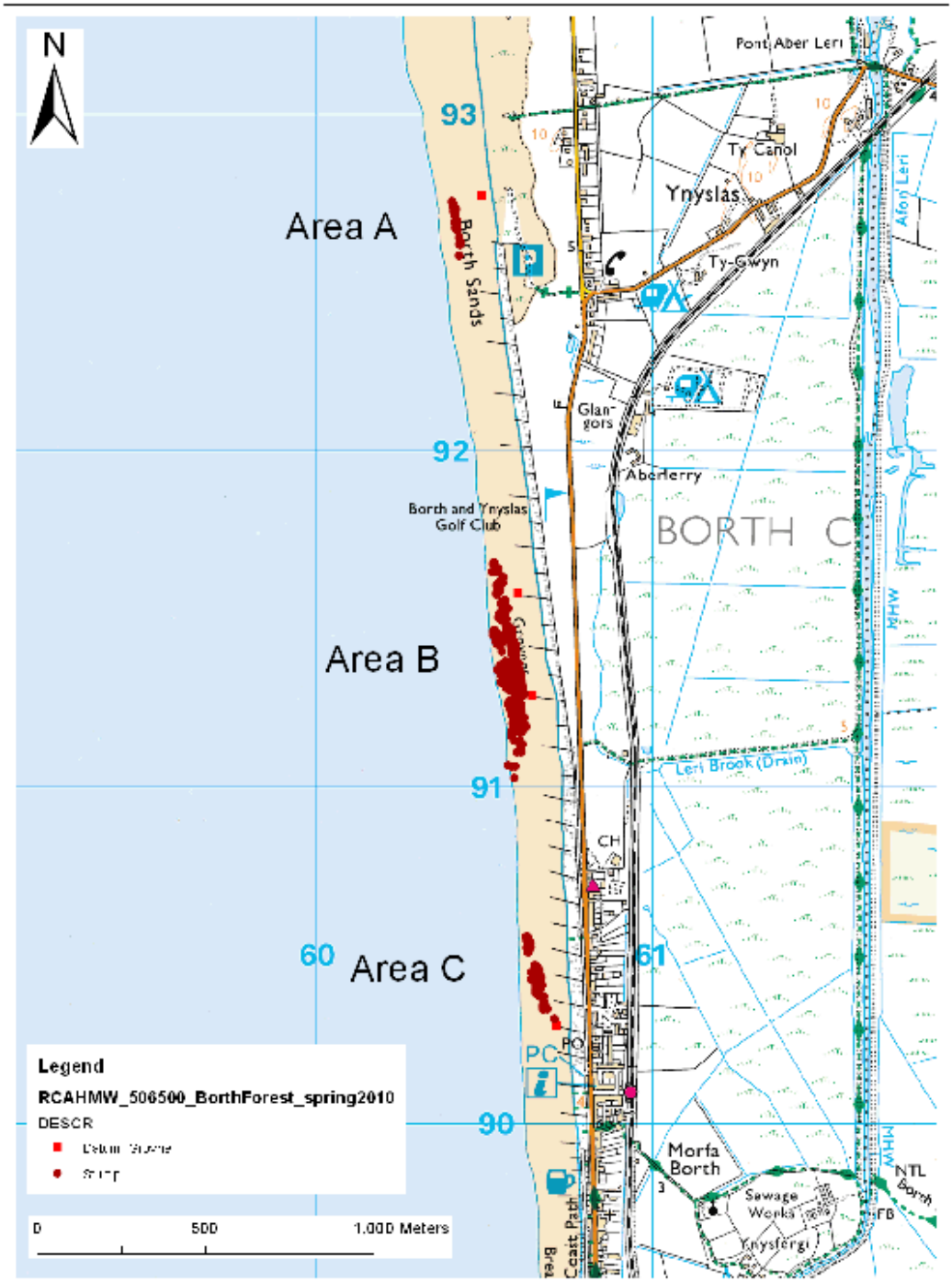
27 digital fieldwork images (DS2010_340)

Report in MS Word format and .pdf; map illustrations as .tiff

ArcGIS 10 shapefile; MS Access database containing waypoints.

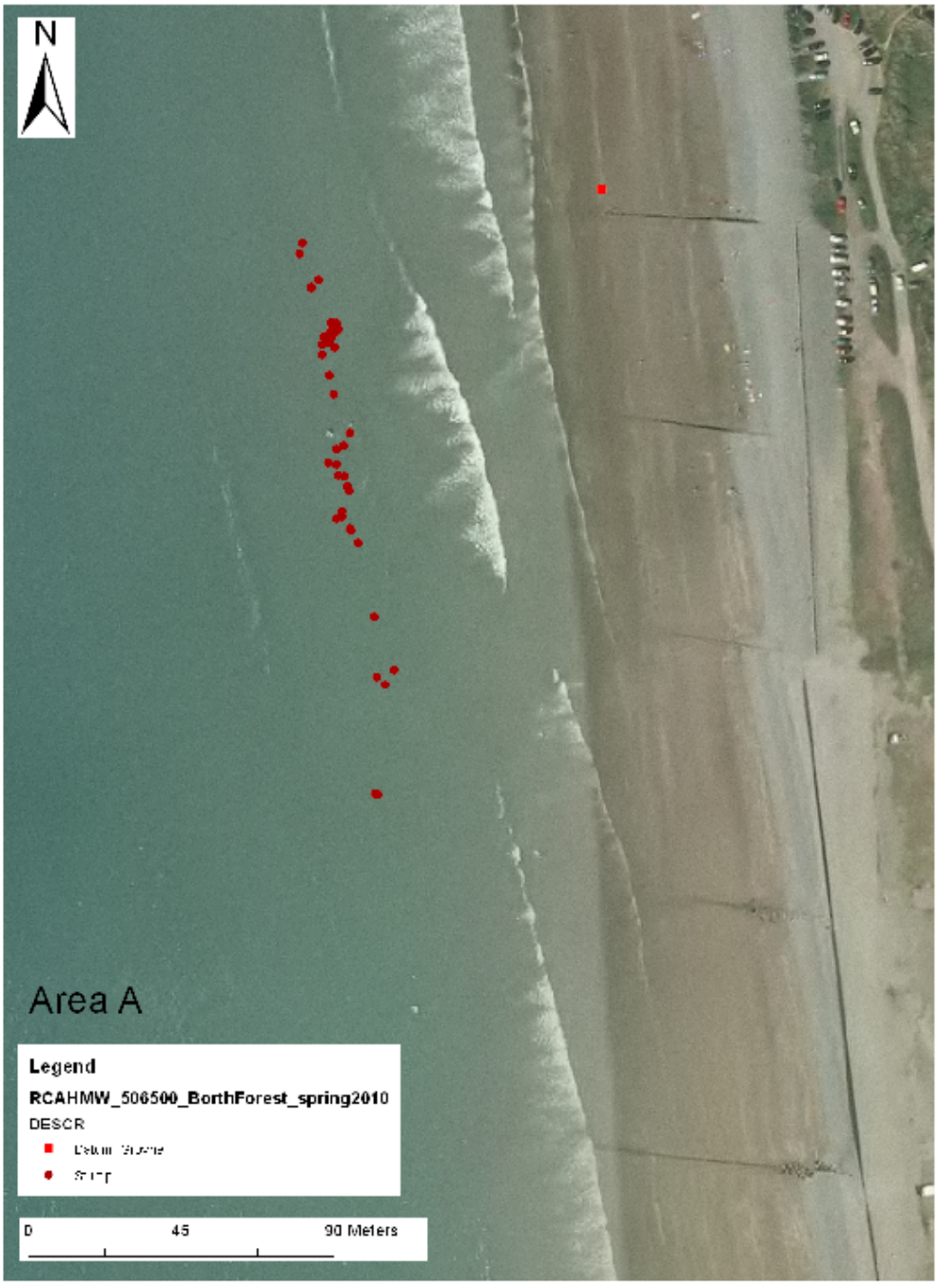
.kml files downloaded from Garmin Etrex Venture hand-held DGPS unit

Figure 1: Survey Area



Crown Copyright and database right 2011. Ordnance Survey 100025935

Figure 2: Area A



Background aerial photography 2006-9, National Assembly of Wales
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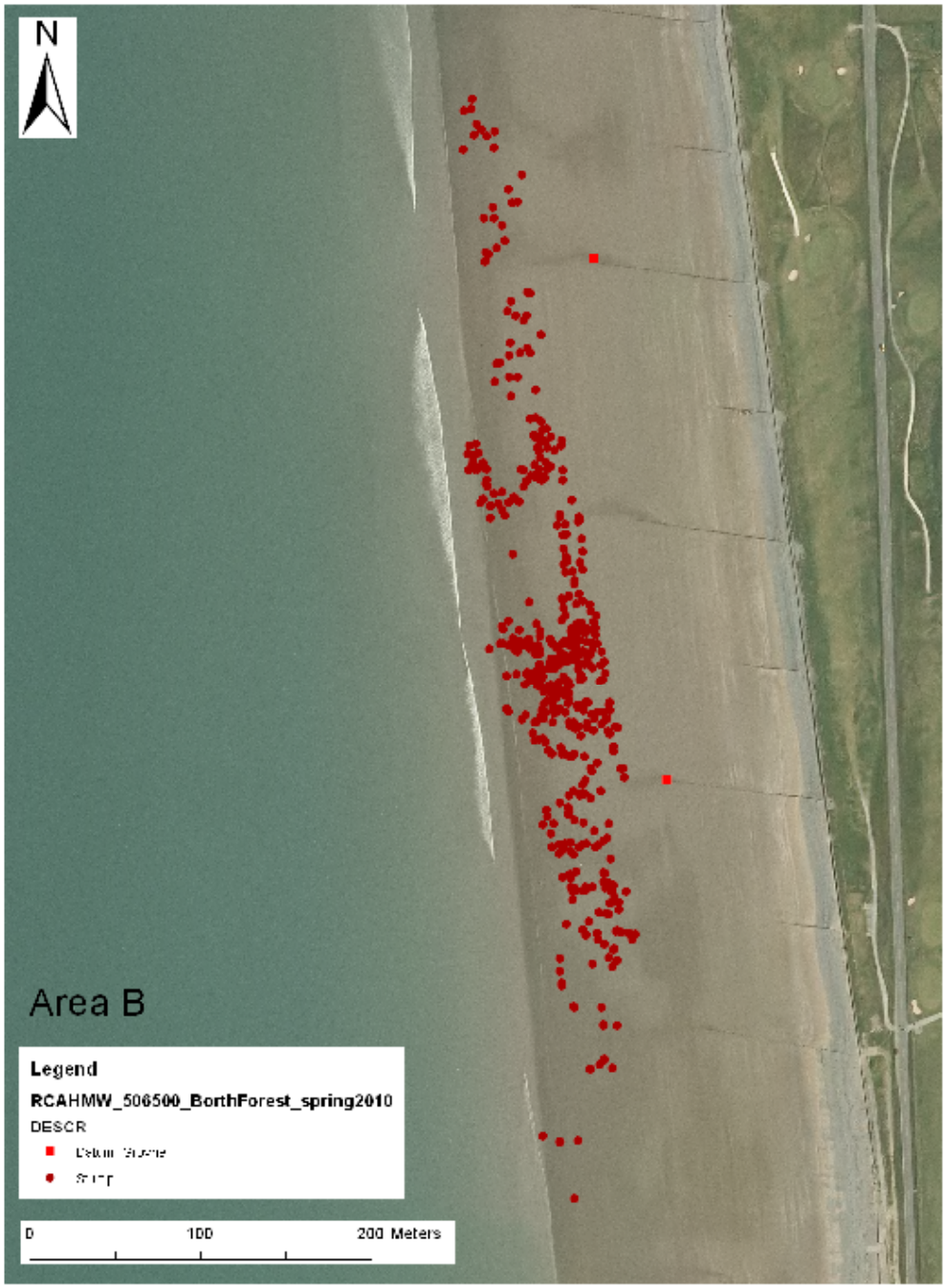
Figure 3: Area B



Background aerial photography 2006-9, National Assembly of Wales
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Figure 4: Area C

Background aerial photography 2006-9, National Assembly of Wales
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Figure 5: Area A looking northwards

Figure 6: Area B looking northwards

Figure 7: Area C looking southwards

Figure 8: Twigs and small branches embedded in the surface layer of the peat in Area A

Figure 9: Two root systems and a fallen trunk from Area B

Figure 10: Tree stump retaining its outer bark with Garmin Etrex Venture hand-held DGPS unit centred over the root system to record a waypoint from Area B