

Baseline vegetation validation (site checks) surveys, 2019

Natural England Research Report NERR091

Baseline vegetation validation (site checks) surveys, 2019

Natural England Field Unit project: NEFU2019-058

Mark Beard



Published February 2021

This report is published by Natural England under the open Government Licence - OGLv3.0 for public sector information. You are encouraged to use, and reuse, information subject to certain conditions. For details of the licence visit [Copyright](#). Natural England photographs are only available for non commercial purposes. If any other information such as maps or data cannot be used commercially this will be made clear within the report.

ISBN 978-1-78354-725-8

© Natural England 2018

Project details

This report should be cited as: BEARD, M.G. 2019. Penwith Moors proposed Site of Special Scientific Interest Baseline vegetation validation (site checks) surveys, 2019, Natural England Field Unit project: NEFU2019-058. Natural England.

Project manager

Mark Beard

Penwith Moors proposed Site of Special Scientific Interest



Baseline vegetation validation (site checks) surveys, 2019

Natural England Field Unit project: NEFU2019-058

Project report (summary version)



Project Co-ordinators: Rob Large / Mark Beard
Natural England Field Unit / Devon Cornwall & Isles of Scilly Team

Report by: Mark Beard
November 2019

Contents

	Page no.
Introduction	1
Prioritised sampling of survey sites	1
Methodology	2
Access permissions	3
Field work	4
Field results	5
Changes in baseline vegetation mosaic	5
Results by priority habitat	6
Discussion of individual survey sites where the target for no apparent loss had been failed in the site survey (omitted from this summary version)	7
Updated Condition Assessments	8
Validity of the 2012-2014 vegetation data baseline	9
Appendix 1: Prioritised list of survey sites for re-assessment sample in 2019	11
Appendix 2: Map of 2012-2014 survey sites	15
Appendix 3: Assessment of habitat change in 2019	16
Appendix 4a: Lowland heathland Condition assessments in 2012-2014 and in 2019	21
Appendix 4b: Lowland acid grassland Condition assessments in 2012-2014 and in 2019	23
Appendix 4c: Lowland mire / Purple moor-grass and rush pasture Condition assessments in 2012-2014 and in 2019	24
Appendix 5: surveyors 2019	26

Introduction:

Penwith Moors proposed Site of Special Scientific Interest (SSSI) is located between St Just and St Ives in West Penwith, Cornwall; also referred to as the Land's End peninsula. The proposed SSSI consists of multiple parcels of largely fragmented 'rough ground' over granite rocks with acid soils supporting lowland heathland, lowland acid grassland, mires, bracken and scrub. At the time of writing this SSSI designation is planned for Q1 (April-June) of reporting year 2020-21.

Some 2,440 ha were surveyed between 2012 and 2014 to establish a vegetation baseline for the proposed SSSI. These surveys consisted of: (1) [National Vegetation Classification](#) mapping following the methodology described by *Rodwell et al*, 1991 – 2000; and (2) Condition Assessments following [Common Standard Monitoring](#) methodology described by JNCC. These surveys were undertaken by Cornwall Environmental Consultants Ltd (2012) and Hewins Ecology (2013-2014) under contract to Natural England.

In 2019 this vegetation baseline is 5 to 7 years old. Whilst there is no maximum eligibility age for such baseline evidence defined by the [Guidelines of the Selection of Biological Sites of Special Scientific Interest](#), the Senior Adviser for SSSI designations (Landscape, Biodiversity & Designations Team) advised that it would be beneficial to undertake validation of that baseline prior to SSSI notification given the age of this baseline data. This would either highlight changes in the habitat mosaic during the intervening years or, if no significant changes were observed, give confidence that the 2012-2014 baseline remains valid.

Given the scale of the validation exercise the Area Team requested the assistance of the Natural England Field Unit (NEFU). This project was agreed by the Field Unit Team Leader as a NEFU project for 2019 (ref: NEFU2019-058).

Prioritised sampling of survey sites

The 2012-2014 baseline surveys were undertaken and reported upon over a total of 50 survey sites. These survey sites were each allocated a number 1 to 56 for ease of reference, though it should be noted that whilst 56 survey sites were originally earmarked for survey, 5 were not surveyed in the 2012-2014 programme (survey sites 6, 8, 9, 13 and 30). Two adjacent survey sites were paired together for reporting purposes (32/33 and 52/53) which are treated as effectively single survey sites for the purpose of this validation survey; conversely, one survey site (44) was surveyed in two parts (labelled 44 and 44a).

The NEFU validation project had a limited capacity in terms of staff days available. Based upon a best estimate of revisiting an average of 2 survey sites per day it was clear there would be insufficient staff days available to the project to revisit all 50 survey sites. Consequently, a protocol for prioritising survey sites to be revisited was

formulated in consultation with relevant national specialists (for heathland, grasslands and wetlands). This was based upon the assumption that those survey sites with the smallest extents of important habitat and those without agreed conservation management regimes (such as through agri-environment schemes) would be the most vulnerable to adverse change. Conversely, those survey sites with the largest extents of important habitats and with agreed conservation management regimes would be the most robust. Important habitat was defined as those semi-natural habitats present which would qualify as notified SSSI features of a Penwith Moors namely: lowland heath; lowland acid grassland; and mire. Many survey sites have multiple ownership with associated management status. A three-tier prioritisation exercise was undertaken, defined thus:

Priority 1 survey sites: all survey sites with less than 10 ha of important habitat, irrespective of their management status;

Priority 2 survey sites: survey sites with 10 ha or more of important habitat but with less than 50% by area under an agreed conservation management regime;

Priority 3 survey sites: survey sites with 10 ha or more of important habitat but with at least 50% by area under an agreed conservation management regime.

The prioritisation protocol was to seek to revisit Priority 1 survey sites first, then move on to as many Priority 2 survey sites as staff resource allowed and finally to revisit as many Priority 3 survey sites as staff resource allowed in the time remaining. A table showing the priority status of all 50 survey sites is given at Appendix 1.

Methodology

To allow the maximum number of survey sites to be revisited a rapid assessment methodology was deployed. This required a 'walk over' of each survey site revisited rather than a structured sampling technique or recording within quadrats. Such an approach is considered consistent with Natural England's 'site checks' approach for the rapid re-assessment of notified SSSI units.

Within each survey site revisited the surveyors were to:

(1) visually assess any significant changes to the semi-natural vegetation mosaic compared with the 2012 / 2013 / 2014 baseline; significant changes to note included changes in land use, permanent loss of semi-natural habitat to development, tipping, quarrying, hardstanding or afforestation, major increase in the cover of scrub and bracken and significant changes to hydrology (e.g. – recent drainage); surveyors were discouraged from reporting minor changes in the ratio of different semi-natural habitats within the same survey site or from attempting to reallocate stands of vegetation to different NVC communities or sub-communities from those originally

mapped in 2012-2014. Any significant changes to be annotated on copies of the 2012-2014 NVC maps reproduced over Ordnance Survey base-maps.

(2) undertake an updated Condition Assessment using Common Standards Monitoring attributes for each habitat in each survey site which had been assessed in 2012-2014; these to be based upon a rapid walk-over survey rather than any number of structured or random samples. Field data to be recorded on bespoke spreadsheets using iPads.

The condition assessments made in 2012-2014 were based on CSM generic targets for the habitats / NVC communities assessed and not on site-specific targets. Although in 2019 a set of 'Favourable Condition Tables' (FCTs) for the proposed SSSI are in draft which would allow a more bespoke set of site-specific targets to be used, the 2019 condition assessments are again based upon generic targets in order to allow a direct comparison with results from 2012-2014. Otherwise, some apparent changes in condition status may be the product of using different targets rather than real change. It should be noted that the use of generic targets means that condition assessments from 2012-2014 and from 2019 should be regarded as provisional.

Access permissions

Land ownership and occupancy was ascertained from a number of sources, mainly from HM Land Registry and Rural Payments Agency's Rural Land Register. Permission to access survey sites was sought through:

1. Written permissions by providing a reply form or requesting a response by email;
2. Verbal permissions via telephone, confirmed by either letter or email to the owner/occupier;
3. In cases where voluntary permissions were not forthcoming, by using legal powers of entry under section 51 of the Wildlife & Countryside Act 1981 (as amended).

In the event, voluntary permissions were received from 120 owners and occupiers whilst 6 section 51 authorisations were used. No responses were elicited from a further 4 owners/occupiers, but these were for minor parts of Priority 3 survey sites considered unlikely to be revisited with the staff resource available.

Records of access permissions / section 51 authorisations have been recorded and are available upon request.

Field work

Field work was undertaken over 2 separate weeks: week commencing 03 June 2019 and week commencing 01 July 2019. 8 staff were available in week 1 with 9 in week 2 though not all staff were available every day of each respective week, with most staff being able to offer 2 to 4 days each. A list of surveyors is provided at Appendix 5. A project briefing was delivered on the first day of each week along with a practice field exercise to ensure familiarity with methodology, use of iPads and greatest possible consistency in approach. A field work risk assessment was provided to all surveyors; staff worked in pairs for reasons of health and safety.

By following the survey site prioritisation as described above, all 17 Priority 1 survey sites and all 16 priority 2 survey sites were re-visited and assessed along with 8 of the 17 Priority 3 survey sites; a total of 41 survey sites. This equates to around 82% of survey sites by number or nearly 70% of survey sites by area. See Appendix 2.

This approach resulted in a large block of contiguous survey sites (31, 32/33, 34, 35) being omitted from the sample survey. Whilst this may appear from the map in Appendix 2 as a large area of omission, this is consistent with the sampling methodology. These are relatively large blocks of contiguous semi-natural habitat mostly subject to conservation management agreements and as such are the least likely to experience successional change or inappropriate management. Indeed, informal observations of these survey sites from adjacent public highways by the author in October 2019, from which much though not all parts of those survey sites were visible, noted no apparent loss of semi-natural habitat. Whilst the survey methodology described in the section above was not applied, this observation lends confidence to the sampling protocol and the assumption that such areas are the most robust in ecological terms.

Most survey sites supported a single habitat to be re-assessed, though several supported 2 or 3 habitats to be re-assessed. Within the sample of survey sites re-visited, all lowland heathland and lowland acid grassland condition assessments made in 2012-2014 were repeated. However, 6 of the 18 condition assessments for lowland fen (including purple moor-grass and rush pasture) were not repeated because the surveyors were either unable to access the stand(s) of fen originally assessed or were of the opinion that the stands were so transitional / intermediate to other habitats such as 'humid' heathland that the lowland fen assessment would not be appropriate. The extent of such lowland fen stands ranged from 0.02 ha to 2.0 ha. It should be noted that the fieldwork was undertaken following a prolonged period (several months) of unusually dry weather which may have altered the appearance and/or composition of some fen stands.

Field results

Field results fall into two parts for each survey site revisited:

1. Change in baseline vegetation mosaic;
2. Condition Assessments for relevant habitats.

Changes in baseline vegetation mosaic

Of the 41 survey site re-visited:

- 40 survey sites contained Lowland heathland priority habitat;
- 7 survey sites contained Lowland acid grassland priority habitat;
- 18 survey sites contained Lowland fen and/or Purple moor-grass and rush pasture priority habitats.

Any changes in baseline vegetation mosaic were assessed in 2 stages:

(1) field surveyors were asked to state whether significant changes were observed and record this on the field forms for each survey site. Where the surveyors had recorded no apparent loss (described as “No unrecoverable loss” in the field forms) for those habitats assessed it may be concluded that the mosaic of important semi-natural habitats either remains unaltered or has only undergone minor / insignificant changes which were considered too small to map in the field and which would have no implications for the proposed SSSI boundary.

(2) field surveyors were asked to annotate site maps and/or make more detailed field-notes where significant changes were observed. Where surveyors had recorded a failure against the target for no apparent loss of priority habitat the site maps and/or field notes were referred to in order to interpret the magnitude and significance of the changes. From those sources, the project co-ordinators allocated changes within survey sites to one of 8 possible categories:

- a. Minor successional: where small-scale natural successional changes have been noted but where the mosaic of semi-natural habitats remains broadly the same and which do not warrant any change to the proposed SSSI boundary;
- b. Significant successional: where larger-scale natural successional changes have been noted but where a mosaic of semi-natural habitats remains with continued representation of at least one priority habitat within the survey site; possible changes to the proposed SSSI boundary to be considered on a case-by-case basis;
- c. Minor agricultural: where small-scale agricultural improvements (e.g. fertiliser application, supplementary feeding areas, re-seeding) have been noted but where

the mosaic of semi-natural habitats remains broadly the same and which do not warrant any change to the proposed SSSI boundary;

d. Significant agricultural: where larger-scale agricultural improvements have been noted but where a mosaic of semi-natural habitats remains with continued representation of at least one priority habitat within the survey site; possible changes to the proposed SSSI boundary to be considered on a case-by-case basis;

e. Minor management: where small-scale ecological changes have been noted as a result of land management such as grazing livestock and/or burning management, but where the mosaic of semi-natural habitats remains broadly the same and which do not warrant any change to the proposed SSSI boundary;

f. Significant management: where larger-scale ecological changes have been noted as a result of land management, other than agricultural improvement, but where a mosaic of semi-natural habitats remains with continued representation of at least one priority habitat within the survey site; these include significant areas where moorland fires (managed or unmanaged; planned, accidental or arson) have changed the habitat(s) present; possible changes to the proposed SSSI boundary to be considered on a case-by-case basis;

g. Minor development; where small-scale permanent changes in the land surface have been noted but where the mosaic of semi-natural habitats remains broadly the same and which could reasonably be encapsulated within the proposed SSSI boundary without the need to change the proposed SSSI boundary;

h. Significant development: changes in land use, deep quarrying or the construction of permanent buildings/structures which could not be recovered through reasonable intervention management and would require exclusion from the proposed SSSI boundary.

Results by priority habitat

Lowland heathland

Of the 40 survey sites re-visited containing lowland heathland: 35 passed the target for no apparent loss; 2 were assessed as having undergone minor successional changes; 1 was assessed as having been subject to a significant development (albeit no major loss of priority habitat), and; 1 was assessed as having undergone a significant management change.

Lowland acid grassland

Of the 7 survey sites re-visited containing lowland acid grassland: 5 passed the target for no apparent loss, whereas; 2 were assessed as having undergone significant agricultural change (due to supplementary feeding in both cases).

Lowland fen

Of the 18 survey sites re-visited containing lowland fen: 13 passed the target for no apparent loss; 2 were assessed as having undergone minor management changes; 1 was assessed as having undergone a minor successional change, and; 2 were not assessed due to difficulties of access.

Summary

A summary table of vegetation mosaic validation is given at Appendix 3.

Each survey site for which the target for no apparent loss had been failed by the field surveyors has been assessed in terms of possible implications for the proposed SSSI boundary and each case will be described individually in a subsequent version of this report. No survey sites were assessed as having priority habitats which fell into the “Significant successional”, “Minor agricultural” or “Minor development” categories.

Discussion of individual survey sites where the target for no apparent loss had been failed in the site survey

This section, which will provide accounts of selected individual sites, has been omitted from this summary version of the report. A full version of the report including discussion of selected individual survey sites will be made available on-line at Natural England’s Access to evidence catalogue in due course.

Updated Condition Assessments

The field data recorded on spreadsheets was uploaded from iPads and collated by the one of the project co-ordinators. In summary, of 59 areas of habitat assessed across 41 survey sites, 9 were assessed as favourable and 50 as unfavourable.

Lowland heathland

Of the 41 survey sites re-visited, 40 contained lowland heathland habitat which had been condition assessed in 2012-2014, all 40 being assessed as unfavourable condition in that period. In 2019, 39 of these were assessed again as unfavourable whilst one survey site (no. 18) was re-assessed as favourable. By area this equates to 92% in unfavourable condition and 8% in favourable; an 8% (positive) change in condition status for this feature.

Lowland acid grassland

Of the 41 survey sites re-visited, 7 contained lowland acid grassland habitat which had been condition assessed in 2012-2014, all 7 being assessed as unfavourable condition in that period. In 2019, 4 of these were assessed again as unfavourable whilst 3 survey sites were re-assessed as favourable. By area this equates to 57% in unfavourable condition and 43% in favourable; a 43% (positive) change in condition status for this feature. This is the largest net (positive) change of the three habitat types assessed and is most probably explained by beneficial impact during the intervening years from conservation grazing management supported by agri-environment schemes which apply to relevant parts of survey sites 12 and 46.

Lowland fen (including purple moor-grass and rush pasture)

Of the 41 survey sites re-visited, 18 contained lowland fen habitat which had been condition assessed in 2012-2014, 5 of which were assessed as favourable and 13 as unfavourable in that period. In 2019, 6 of these were not assessed, 8 assessed as unfavourable and 4 as favourable condition. Of those re-assessed, one survey site had declined in condition, 2 had improved and 9 had no change. This equates by area to 46% in unfavourable condition and 54% in favourable; those stands of lowland fen in favourable condition tended to be larger in area. By area this equates to a 38% (positive) net change in condition status for this feature.

Summary

A summary table of updated condition assessments is given at Appendices 4a-c. It is proposed that for reporting purposes the most up-to-date condition assessments per habitat feature per survey site are used. Those re-assessed in 2019 will be reported using 2019 results whereas those not re-assessed in 2019 will be reported using condition assessment results from the original 2012-2014 surveys. None of the condition assessments made in 2019 have any implications for the proposed SSSI boundary.

Validity of the 2012-2014 vegetation data baseline

The primary objective of this project was to ascertain the extent to which the 2012-2014 vegetation baseline data remains valid evidence to support the proposed SSSI notification, based upon a prioritised sample of survey sites.

A total of 63 habitat 'site checks' were made within the 40 survey sites sampled. The following table summarises those results:

habitat	No apparent loss	Minor change, no implications for SSSI boundary	Significant change, but no change to SSSI boundary	Significant change, with possible change to SSSI boundary
Lowland heath	35	3	1	1
Lowland acid grassland	5	-	2	-
Lowland mire	13	3	-	-
Combined (number)	53	6	3	1
Combined expressed as % of habitats per survey sites re-visited	84.1%	9.5%	4.8%	1.6%
Combined expressed as % of area of habitats (ha) in survey sites re-visited*	96.32%	3%	0.68%	<0.01%

*total of 952.99 ha (lowland heathland, lowland acid grassland, lowland fen and purple moor-grass & rush pasture, combined)

Based upon the above analysis only 4 cases, representing <1% by area (ha) of all habitat 'site checks' within the sample, were concluded to have had significant habitat changes. Of these only 1 case, representing <0.01% by area (ha) of all habitat 'site checks' within the sample, was concluded to result in a proposed alteration to the provisional SSSI boundary.

Whilst occasional localised damage to habitats was observed, major changes with possible implications for the proposed SSSI boundary were rare. Overall, it is reasonable to conclude that the 2012-2014 vegetation baseline data remains a sufficiently valid and reliable evidence base to support the notification of Penwith Moors as a Site of Special Scientific Interest (SSSI). This conclusion is endorsed by the following senior specialists within Natural England:

- Dr Isabel Alonso, Senior Specialist for lowland heathland habitats (email dated 31/10/2019);
- Dr Richard Jefferson, Senior Specialist for lowland grassland habitats (emails dated 24/10/2019 & 31/10/2019);
- Iain Diack, Senior Specialist for fen & other wetland habitats (email dated 11/11/2019)



Lowland heathland habitat at Tredinney Common (July 2019)

Acknowledgements

Maps in this report contain, or are derived from, information supplied by Ordnance Survey. © Crown copyright. All rights reserved. Ordnance Survey Licence number 100022021

All photographs courtesy of Rob Large, Natural England.

Appendix 1: Prioritised list of survey sites for re-assessment sample in 2019

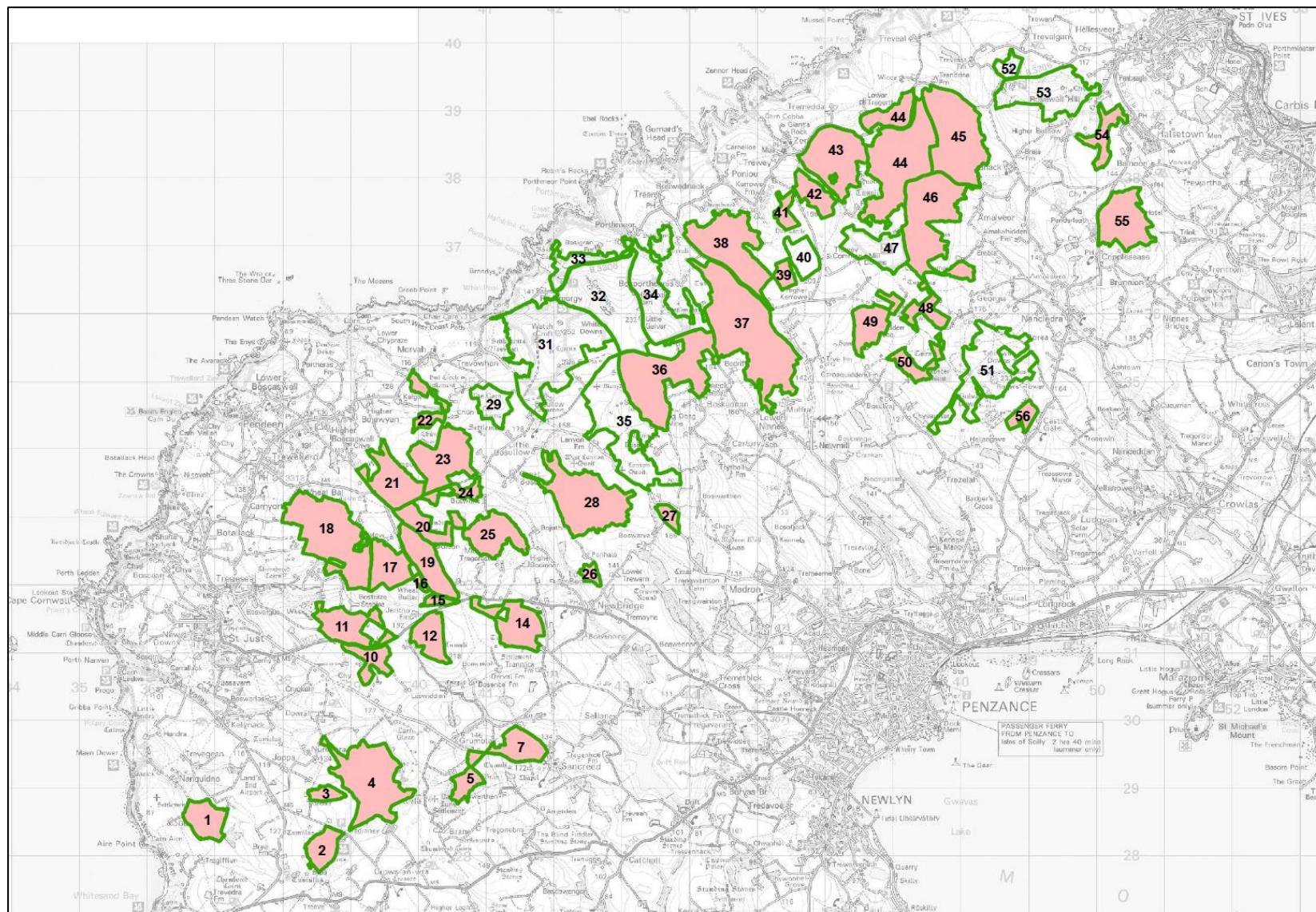
Survey area no.	Name	NVC survey year	survey site area (ha)	acid grassland (ha)	lowland heathland (ha)	wetland mires (ha)	combined area (ha)	live a.e. scheme?	scheme expires	scheme covers 50%+ of survey area? (Y/N)	Priority for survey (1, 2 or 3)
3	Carn Grean	2014	8.78	0.16	6.61		6.77	no			1
5	Caer Bran	2014	17.4	0.1	6.9		7	no			1
7	Sancreed Beacon and Grumbla Common	2013	27		3.4		3.4	yes	2013	Y	1
10	Leswidden	2013	17.9		5.9		5.9	yes	2022	N	1
15	Wheal Buller South	2014	5.6	0.1	1.5	0.1	1.7	no			1
16	Wheal Buller North	2014	2.4	0.2	0.5		0.7	no			1
22	Hale Downs and Tor Noon	2014	16.2	0.03	4.75	0.65	5.43	yes	2022	Y	1
24	Boswens North	2014	11.7	0.3	3.5	4.1	7.9	no			1
26	Penhale Trewern and Trewern Moor	2014	13.2	<0.1	1.2	1.9	3.1	yes	2022	Y	1
27	Pedn Venton	2013	8.1	0.5	2.4		2.9	yes	2022	Y	1
39	East of Chykembro Common	2012	9.42	1.71	7.71		9.42	yes	2023	Y	1
41	Treway Hill West	2013	11.36	5.56	2.51		8.07	yes	2022	Y	1
42	Treway Hill East	2014	21.8	1.5	4	0.3	5.8	no			1
50	Carnaquidden Downs to Great Downs	2014	18.22	0.52	4.94		5.46	yes	2020	N	1

54	Bussow Moor	2013	20.12			4.11	4.11	no			1
56	Castle Gate	2014	11.6		0.6		0.6	yes	2021	N (marginal)	1
44A	Eagle's Nest and Wicca Croft	2013 & 2014	23.91	0.8	0.8	0.05	1.65	yes	2023	N (marginal)	1
1	Nanquidno Downs	2014	26.89	2.55	3.66	4.28	10.49	no			2
4	Bartinney Downs, Tredinney Common and Numphra Common	2013 & 2014	87.47	6.3	45.94	1	53.24	yes	2021	N	2
11	Busvargus and Tregeseal Common	2013	40.25		24.34	2	26.34	no			2
14	Tregerras etc, Bosvenning & Roskennals Common, Receven & Hewes Commons	2012 & 2014	42.49	0.1	33.45	0.1	33.65	no			2
18	Carnyorth Common to Bostraze Bog	2013	102.5	0.5	69.9	10.3	80.7	yes	2020	N	2
21	Woon Gumpus Common	2013	45.77		37.34	1.13	38.47	no			2
25	Boswens Common East	2014	41.8	6	21.6	1.7	29.3	yes	2022	N	2
28	Boswarva Carn to Great Bosulow	2013 & 2014	88	1.2	31.6	12.7	45.5	yes	2022	N	2
36	Nine Maidens Common	2013	103.48		71.42	7.43	78.85	yes	2022	N	2

37	Mulfra Hill to Treen Common	2013 & 2014	146.38	2.54	110.2		112.74	yes	2022 & 2021	N	2
38	Chykembro & Gear Commons & Pennance	2012 & 2014	79.48	2.2	38.41	5.7	46.31	yes	2023	N	2
43	Zennor Hill and Rosemorran	2012 & 2013	66.97		22.63	1.1	23.73	no			2
44	Foage Farm to Sperris Croft & Boscubben Croft	2012 & 2013	105.61	4.63	71.99	0.02	76.64	yes	2022 & 2023	N	2
45	Trendrine Hill and Beagletodn Downs	2013	91.6	0.1	27.7	0.1	27.9	no			2
46	Amalveor Downs to Noon Billas	2013 & 2014	99.2	9.5	78.1	0.8	88.4	yes	2022	N	2
55	Trink Hill	2013	45.71	0.09	14.27	1.49	15.85	no			2
2	Chapel Carn Brea	2012	21.5	0.63	15.96		16.59	yes	2020	Y	3
12	Botrea	2013 & 2014	26.88	4.21	15.68		19.89	yes	2021	Y	3
17	Bostraze Bog to Boslow	2014	26.8	0.5	2.1	11.6	14.2	yes	2021	Y	3
19	Dry Carn and North Road	2013	40.4	0.1	28.5		28.6	yes	2022	Y	3
20	Dry Carn and Boswens Common West	2013	22.1	1.2	19.6	0.5	21.3	yes	2023	Y	3
23	Higher Downs and Chun Downs	2012 & 2014	58.14	2.2	39.14	0.2	41.54	yes	2022	Y	3
29	Carn Downs	2013	23.2	6.4	6.7		13.1	yes	2021	Y	3

31	Watch Croft, Trevean, White Downs and Bosulow Common	2012 & 2014	148.59	2.1	80.16		82.26	yes	2021, 2021 & 2023	Y (marginal)	3
34	Bosporthennis to Hannibal's Carn	2012 & 2014	84.31	12.06	19.32	4.62	36	yes	2024 & 2023	Y	3
35	Men-an-Tol Croft, Lanyon Croft & Bosilliack	2013	105.1	3.9	19.2	10	33.1	yes	2021 & 2022	Y	3
40	North of Higher Kerrowe	2013	20.4	2.83	16.87	0.12	19.82	yes	2022	Y	3
47	Trewey Common	2012 & 2013	38.69	2.54	27.22	0.3	30.06	yes	2022 & 2022	Y	3
48	Conquer Downs to Lady Downs	2013	16.41		15.63	0.05	15.68	yes	2022	Y (marginal)	3
49	Carnaquidden Downs North	2013	32.81		16.54		16.54	yes	2020	Y	3
51	Trenowin Downs, Tonkins Downs, Gulval Downs & Noon Digery	2012 & 2013	81.46	10.98	40.89	0.86	52.73	yes	2022 & 2021	Y	3
32 + 33	Carn Galver & Bosigran	2012	131.96	1.47	67.63		69.1	yes	2021	Y	3
52 + 53	Trevalgan Hill & Rosewall Hill	2012 & 2014	77.37	1.33	24.08		25.41	yes	2022 & 2022	Y (marginal)	3

Appendix 2: Map of 2012-2014 survey sites with those re-visited as part of the 2019 validation survey shaded pink



Appendix 3: Assessment of habitat change in 2019

Survey site no.	Survey site name	Survey site priority rating (1, 2, 3)	Extent of lowland heathland with each survey site (ha)	Habitat change category (lowland heathland)	Extent of lowland acid grassland with each survey site (ha)	Habitat change category (Lowland acid grassland)	Extent of Lowland fen (includes PMG&RP) with each survey site (ha)	Habitat change category (Lowland fen)
1	Nanquidno Downs	2	3.43	No apparent loss			2.22	No apparent loss
2	Chapel Carn Brea	3	15.96	No apparent loss				
3	Carn Grean	1	6.61	Minor successional				
4	Bartinney Downs, Numphra Common & Tredinney Common	2	45.94	No apparent loss			0.4	No apparent loss
5	Caer Bran	1	6.9	Minor successional				
7	Sancreed Beacon and Grumbla Common	1	3.4	Minor management				
10	Leswidden	1	5.9	No apparent loss				

11	Busvargus and Tregeseal Common	2	24.34	No apparent loss			2	Not assessed
12	Botrea	3	15.68	No apparent loss	4.21	No apparent loss		
14	Tregerras etc, Receven & Hewes Commons Bosvenning and Roskennals Common	2	33.45	No apparent loss				
15	Wheal Buller South	1	1.5	No apparent loss				
16	Wheal Buller North	1	0.5	No apparent loss				
17	Bostraze Bog to Boslow	3	2.1	No apparent loss			11.6	Minor management
18	Carnyorth Common to Bostraze Bog	2	69.9	No apparent loss			10.1	No apparent loss
19	Dry Carn and North Road	3	28.5	No apparent loss				
20	Dry Carn and Boswens Common West	3	19.6	No apparent loss				

21	Woon Gumpus Common	2	37.34	No apparent loss				
22	Hale Downs and Tor Noon	1	4.75	No apparent loss				
23	Higher Downs and Chun Downs	3	39.14	No apparent loss	1	No apparent loss		
24	Boswens North	1	3.5	No apparent loss			4.1	No apparent loss
25	Boswens Common East	2	21.6	No apparent loss	4.9	Significant agricultural	1.7	No apparent loss
26	Penhale Trewern and Trewern Moor	1	1.2	No apparent loss			1.9	No apparent loss
27	Pedn Venton	1	2.4	Significant management				
28	Boswarva Carn to Great Bosulow	2	31.6	No apparent loss			12	No apparent loss
36	Nine Maidens Common	2	71.42	No apparent loss			7.43	No apparent loss
37	Mulfra Hill to Treen Common	2	110.2	No apparent loss				

38	Chykembro & Gear Commons & Pennance	2	38.41	No apparent loss	2.2	No apparent loss	5.7	No apparent loss
39	East of Chykembro Common	1	7.71	No apparent loss				
41	Trewey Hill West	1	2.51	No apparent loss	5.56	Significant agricultural		
42	Trewey Hill East	1	4	No apparent loss			0.3	No apparent loss
43	Zennor Hill and Rosemorran	2	22.63	No apparent loss			1.1	No apparent loss
44	Foage Farm to Sperris Croft & Boscubben Croft	2	67.71	No apparent loss			0.02	Minor management
44A	Eagle's Nest and Wicca Croft	1	0.8	No apparent loss	0.8	No apparent loss	0.05	No apparent loss
45	Trendrine Hill and Beagletodn Downs	2	27.7	No apparent loss				
46	Amalveor Downs to Noon Billas (north)	2	77.8	No apparent loss	5.1	No apparent loss	0.6	Not assessed

48	Conquer Downs to Lady Downs	3	15.63	No apparent loss				
49	Carnaquidden Downs North	3	16.54	No apparent loss				
50	Carnaquidden Downs to Great Downs	1	4.94	No apparent loss				
54	Bussow Moor	1					4.11	No apparent loss
55	Trink Hill	2	14.27	Significant development			1.49	Minor successional
56	Castle Gate	1	0.6	No apparent loss				
	total extent within survey sites re-visited (ha)		888.72		23.77		40.5	

Appendix 4a: Lowland heathland Condition assessments in 2012-2014 and in 2019

Survey site no.	Survey site name	Survey site priority rating (1, 2, 3)	Extent of lowland heathland with each survey site (ha)	Lowland Heathland CA 2012-2014	Lowland Heathland CA 2019
1	Nanquidno Downs	2	3.43	UNFAVOURABLE	UNFAVOURABLE
2	Chapel Carn Brea	3	15.96	UNFAVOURABLE	UNFAVOURABLE
3	Carn Grean	1	6.61	UNFAVOURABLE	UNFAVOURABLE
4	Bartinney Downs, Numphra Common & Tredinney Common	2	45.94	UNFAVOURABLE	UNFAVOURABLE
5	Caer Bran	1	6.9	UNFAVOURABLE	UNFAVOURABLE
7	Sancreed Beacon and Grumbla Common	1	3.4	UNFAVOURABLE	UNFAVOURABLE
10	Leswidden	1	5.9	UNFAVOURABLE	UNFAVOURABLE
11	Busvargus and Tregeseal Common	2	24.34	UNFAVOURABLE	UNFAVOURABLE
12	Botrea	3	15.68	UNFAVOURABLE	UNFAVOURABLE
14	Tregerras etc, Receven & Hewes Commons Bosvenning and Roskennals Common	2	33.45	UNFAVOURABLE	UNFAVOURABLE
15	Wheal Buller South	1	1.5	UNFAVOURABLE	UNFAVOURABLE
16	Wheal Buller North	1	0.5	UNFAVOURABLE	UNFAVOURABLE
17	Bostraze Bog to Boslow	3	2.1	UNFAVOURABLE	UNFAVOURABLE
18	Carnyorth Common to Bostraze Bog	2	69.9	UNFAVOURABLE	FAVOURABLE
19	Dry Carn and North Road	3	28.5	UNFAVOURABLE	UNFAVOURABLE
20	Dry Carn and Boswens Common West	3	19.6	UNFAVOURABLE	UNFAVOURABLE

21	Woon Gumpus Common	2	37.34	UNFAVOURABLE	UNFAVOURABLE
22	Hale Downs and Tor Noon	1	4.75	UNFAVOURABLE	UNFAVOURABLE
23	Higher Downs and Chun Downs	3	39.14	UNFAVOURABLE	UNFAVOURABLE
24	Boswens North	1	3.5	UNFAVOURABLE	UNFAVOURABLE
25	Boswens Common East	2	21.6	UNFAVOURABLE	UNFAVOURABLE
26	Penhale Trewern and Trewern Moor	1	1.2	UNFAVOURABLE	UNFAVOURABLE
27	Pedn Venton	1	2.4	UNFAVOURABLE	UNFAVOURABLE
28	Boswarva Carn to Great Bosulow	2	31.6	UNFAVOURABLE	UNFAVOURABLE
36	Nine Maidens Common	2	71.42	UNFAVOURABLE	UNFAVOURABLE
37	Mulfra Hill to Treen Common	2	110.2	UNFAVOURABLE	UNFAVOURABLE
38	Chykembro & Gear Commons & Pennance	2	38.41	UNFAVOURABLE	UNFAVOURABLE
39	East of Chykembro Common	1	7.71	UNFAVOURABLE	UNFAVOURABLE
41	Trewey Hill West	1	2.51	UNFAVOURABLE	UNFAVOURABLE
42	Trewey Hill East	1	4	UNFAVOURABLE	UNFAVOURABLE
43	Zennor Hill and Rosemorran	2	22.63	UNFAVOURABLE	UNFAVOURABLE
44	Foage Farm to Sperris Croft & Boscubben Croft	2	67.71	UNFAVOURABLE	UNFAVOURABLE
44A	Eagle's Nest and Wicca Croft	1	0.8	UNFAVOURABLE	UNFAVOURABLE
45	Trendrine Hill and Beagletodn Downs	2	27.7	UNFAVOURABLE	UNFAVOURABLE
46	Amalveor Downs to Noon Billas (north)	2	77.8	UNFAVOURABLE	UNFAVOURABLE
48	Conquer Downs to Lady Downs	3	15.63	UNFAVOURABLE	UNFAVOURABLE
49	Carnaquidden Downs North	3	16.54	UNFAVOURABLE	UNFAVOURABLE
50	Carnaquidden Downs to Great Downs	1	4.94	UNFAVOURABLE	UNFAVOURABLE
55	Trink Hill	2	14.27	UNFAVOURABLE	UNFAVOURABLE
56	Castle Gate	1	0.6	UNFAVOURABLE	UNFAVOURABLE
	total extent within survey sites re-visited (ha)		888.72		

Appendix 4b: Lowland acid grassland Condition assessments in 2012-2014 and in 2019

Survey site no.	Survey site name	Survey site priority rating (1, 2, 3)	Extent of lowland acid grassland with each survey site (ha)	Lowland ACID GRASSLAND CA 2012-2014	Lowland ACID GRASSLAND CA 2019
12	Botrea	3	4.21	UNFAVOURABLE	FAVOURABLE
23	Higher Downs and Chun Downs	3	1	UNFAVOURABLE	UNFAVOURABLE
25	Boswens Common East	2	4.9	UNFAVOURABLE	UNFAVOURABLE
38	Chykembro & Gear Commons & Pennance	2	2.2	UNFAVOURABLE	UNFAVOURABLE
41	Trewey Hill West	1	5.56	UNFAVOURABLE	UNFAVOURABLE
44A	Eagle's Nest and Wicca Croft	1	0.8	UNFAVOURABLE	FAVOURABLE
46	Amalveor Downs to Noon Billas (north)	2	5.1	UNFAVOURABLE	FAVOURABLE
	total extent within survey sites re-visited (ha)		23.77		

Appendix 4c: Lowland mire / Purple moor-grass and rush pasture Condition assessments in 2012-2014 and in 2019

Survey site no.	Survey site name	Survey site priority rating (1, 2, 3)	Extent of Lowland fen (includes PMG&RP) with each survey site (ha)	Lowland fen (includes PMG&RP) CA 2012-2014	Lowland fen (includes PMG&RP) CA 2019
1	Nanquidno Downs	2	2.22	UNFAVOURABLE	UNFAVOURABLE
4	Bartinney Downs, Numphra Common & Tredinney Common	2	0.4	UNFAVOURABLE	not assessed
11	Busvargus and Tregeseal Common	2	2	UNFAVOURABLE	not assessed
17	Bostraze Bog to Boslow	3	11.6	UNFAVOURABLE	FAVOURABLE
18	Carnyorth Common to Bostraze Bog	2	10.1	UNFAVOURABLE	UNFAVOURABLE
24	Boswens North	1	4.1	UNFAVOURABLE	UNFAVOURABLE
25	Boswens Common East	2	1.7	UNFAVOURABLE	not assessed
26	Penhale Trewern and Trewern Moor	1	1.9	UNFAVOURABLE	UNFAVOURABLE
28	Boswarva Carn to Great Bosulow	2	12	UNFAVOURABLE	FAVOURABLE
36	Nine Maidens Common	2	7.43	UNFAVOURABLE	UNFAVOURABLE
38	Chykembro & Gear Commons & Pennance	2	5.7	FAVOURABLE	FAVOURABLE
42	Trewey Hill East	1	0.3	FAVOURABLE	not assessed
43	Zennor Hill and Rosemorran	2	1.1	UNFAVOURABLE	UNFAVOURABLE

44	Foage Farm to Sperris Croft & Boscubben Croft	2	0.02	FAVOURABLE	not assessed
44A	Eagle's Nest and Wicca Croft	1	0.05	FAVOURABLE	UNFAVOURABLE
46	Amalveor Downs to Noon Billas (north)	2	0.6	UNFAVOURABLE	not assessed
54	Bussow Moor	1	4.11	FAVOURABLE	FAVOURABLE
55	Trink Hill	2	1.49	UNFAVOURABLE	UNFAVOURABLE
	total extent within survey sites re-visited (ha)		40.5		

Appendix 5: surveyors 2019

Week 1 (week commencing 03/06/2019):

Lesley Barton	NEFU / Operations Delivery Team
Mark Beard	NEFU / Devon Cornwall & Isles of Scilly Area Team
Jo Chesworth	NEFU / Somerset, Avon & Wiltshire Team
Mags Cousins	NEFU
Rob Large	NEFU / Devon Cornwall & Isles of Scilly Area Team
Cath Mowat	NEFU / Somerset, Avon & Wiltshire Team
Carol Paterson	NEFU / East Midlands Team
Vaughan Robbins	Devon Cornwall & Isles of Scilly Area Team

Week 2 (week commencing 01/07/2019):

Mark Beard	NEFU / Devon Cornwall & Isles of Scilly Area Team
Jon Boyd	NEFU / Essex, Herts, Beds, Cambs & Northants Team
Sarah Gorman	NEFU
Rob Large	NEFU / Devon Cornwall & Isles of Scilly Area Team
Siobhan Murphy	Devon Cornwall & Isles of Scilly Area Team
Esther Pawley	NEFU
Vaughan Robbins	Devon Cornwall & Isles of Scilly Area Team
Helen Spring	NEFU / Dorset, Hampshire & Isle of Wight Team
Simon Tame	NEFU / Devon Cornwall & Isles of Scilly Area Team

Project co-ordinators: Rob Large & Mark Beard