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Penwith Moors Vascular Plant Survey. (2019)

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Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Background - As a part of the evaluation of land within West Penwith as a potential Site of Special Scientific Interest (SSSI) under the Wildlife & Countryside Act 1981, Natural England has identified five vascular plants as provisional designated features.

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Further information
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Penwith Moors Vascular Plant Survey

Report to Natural England

by

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01/09/2019

INTRODUCTION

As a part of the evaluation of land within West Penwith as a potential Site of Special Scientific Interest (SSSI) under the Wildlife & Countryside Act 1981, Natural England has identified five vascular plants as provisional designated features. These are:

- Coral-necklace *Illecebrum verticillatum*;
- Pale Heath-violet *Viola lactea*;
- Yellow Centaury *Cicendia filiformis*;
- Pillwort *Pilularia globulifera*;
- Cornish Moneywort *Sibthorpia europaea*.

This report summarises the results of a field-based survey by the author in spring/summer 2019 to confirm or otherwise the continued presence of these five species within the proposed SSSI and/or adjacent areas which could be included within the proposed SSSI boundary.

The sites that were visited in the course of this survey are those places, within the area of interest, with post-1999 records stored in the ERICA database, which holds the BSBI data for Cornwall. These sites are tabulated below:

Table 1: the survey sites.

taxa	No. of locations	name	1km^2 OS grid ref
Illecebrum verticillatum Coral-necklace	5	Tredinney Common Woon Gumpus Common Higher Ninnes South of Porthmeor Lanyon Farm	SW 39 28 SW 39 33 SW 45 34 SW 43 37 / SW 43 36 SW 42 34
Viola lactea Pale Dog-violet	3	Tredinney Common Mulfa Hill Woon Gumpus Common	SW 39 28 SW 45 35 SW 39 33
Cicendia filiformis Yellow Centaury	1	Nanquidno Downs	SW 37 28
Pilularia globulifera Pillwort	1	Caer Bran Farm	SW 40 29

In the case of *Sibthorpia europaea* a sample of known locations was checked, rather than all sites, due to the number of recent sightings and their widespread nature.

At each site a thorough search was made for the relevant species where it had been previously recorded and of any suitable habitat in the vicinity, noting the presence or absence of the target species together with 10m GPS grid references and population size, plus an assessment of the suitability of the supporting habitat at the site. In some cases several visits were made if the target species could not be found on the first visit.

RESULTS

Illecebrum verticillatum Coral-necklace

Site 1. Tredinney Common, SW3928

Coral-necklace has been known at the Tredinney Common since 1979. It has been recorded in a small pool (red arrow) within the disused china clay pit (not the large pond) on several occasions (1991, 1995, 2008 & 2013), plus there are records for the edge of the pit (blue arrows) which may be GPS errors for sites within the pit, as no suitable habitat was seen at those points. When visited in 2019 the small pool, where it had been seen previously, was dried up and encrusted by a brown-coloured algal mat and no Coral-necklace was found. It is highly probable that Coral-necklace will reappear in this pool in the future when it is filled with water during the growing season.

The other site at Tredinney Common is on the track to Tredinney Farm from the disused quarry. This track slopes gently and is waterlogged and probably has water flowing gently along it all year round. 61 very small flowering stems were counted within the same 10m grid reference square on this track. Coral-necklace was first recorded on this track in 1995. The end of this track at the point closest to Tredinney Farm has been cut by a ditch, which looks to have been recently dug. This ditch prevents tractors and/or cattle from using the track and without such use the track will undoubtedly become overgrown and the Coral-necklace site will, in time, be lost.

Table 2. The Coral-necklace plants seen in 2019.

Grid ref.	Day	Month	Year	Notes
SW39492856	24	7	2019	61 FLOWERING STEMS

Photo 1. The Coral-necklace site in the small pond within the Tredinney china clay pit. This photograph was taken earlier in the year when it was filled with water but it was too early for Coral-necklace.

Photo 2. The trackway site at Tredinney Common.

Photo 3. Three of the tiny Coral-necklace plants can be seen growing amongst the mat of *Agrostis canina* on the waterlogged farm track.

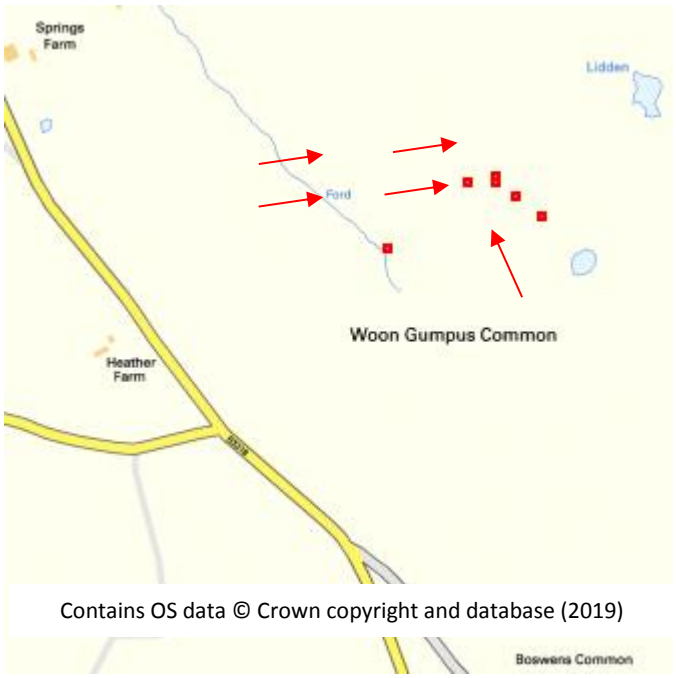
Table 3. The Coral-necklace assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Illecebrum verticillatum***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Currently favourable but it looks like the disturbance by tractor traffic/cattle has ceased.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable <5% cover is an inappropriate measure as it invariably grows where there is much more coverage by other species.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Currently favourable but it looks like the disturbance by tractor traffic/cattle has ceased.
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Illecebrum verticillatum Coral-necklace

Site 2. Woon Gumpus Common, SW3933



At Woon Gumpus Common Coral-necklace grows on the trackways either where a small stream crosses the track or on the edge of temporary pools/puddles. The 2019 records are shows as red squares and other recent sightings arrowed. It has not been recorded in any of the ponds on the Common, nor the black muddy, marshy, low lying areas.

Table 4. The Coral-necklace plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Notes
SW39803368	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	TRACK RUT PUDDLE MARGIN. 90 VERY SMALL (1-4CM) FLOWERING STEMS
SW39763371	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	TRACK RUT PUDDLE MARGIN. 100 VERY SMALL (1-4CM) FLOWERING STEMS
SW39733373	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	TRACK RUT PUDDLE MARGIN. 400 VERY SMALL (1-4CM) FLOWERING STEMS
SW39733374	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	TRACK RUT PUDDLE MARGIN. 700 VERY SMALL (1-4CM) FLOWERING STEMS
SW39693373	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	1 PLANT IN PUDDLE
SW39573363	DR C.N. FRENCH	WOON GUMPUS COMMON	23	7	2019	7 PLANTS

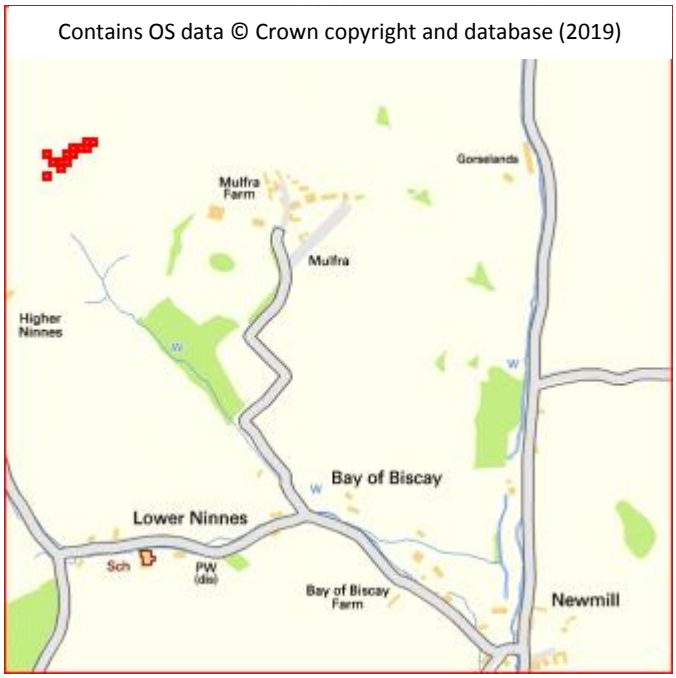
Photo 4. Small Coral-necklace growing along the edge of the moist rutted farm track, which will be a winter-wet pool.

Table 5. The Coral-necklace assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Illecebrum verticillatum at Woon Gumpus Common***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Favourable
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable <5% cover is an inappropriate measure as it invariably grows where there is much more coverage by other species.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Favourable
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Illecebrum verticillatum Coral-necklace

Site 3. Higher Ninnes, SW4534



No Coral-necklace plants were found at Higher Ninnes in 2019. The map above shows where it was recorded in 2009, 2013 and 2014. Coral-necklace has been known from this vicinity since 1874. The recent records are from two wet tracks on the Common. The north south track is the main access to the Common from Higher Ninnes and had a small amount of Coral-necklace at two points in February 2009. The other SW/NE track had a good expanse of Coral-necklace along its length in February 2009.

In 2019 the track with the most Coral-necklace records was too dry when visited on 22/08/2019, although it showed signs of waterlogging earlier in the year being covered by a mat of *Agrostis canina* and having some *Scutellaria minor* present. It was probably suitable for Coral-necklace earlier in the year when water flowered down its length. However, the future prospects for this site are not favourable as the start of the track, at the south west end, has scrubbed over by *Salix cinerea* subsp. *oleifolia* preventing cattle and people from gaining access and so providing beneficial disturbance.

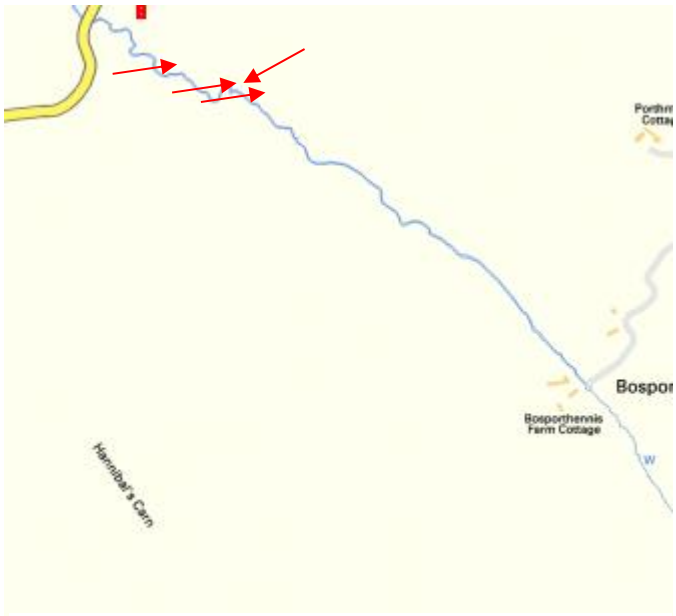
Table 6. The Coral-necklace assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Illecebrum verticillatum***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Currently favourable but it looks like the disturbance by cattle and people is much reduced.
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable <5% cover is an inappropriate measure as it invariably grows where there is much more coverage by other species.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable except at the southern end of the track
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Currently favourable but it looks like the disturbance by cattle and people is much reduced.
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Illecebrum verticillatum Coral-necklace

Site 4. South of Porthmeor, SW4336



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Coral-necklace has been known from the farm track south of Porthmeor since 1989. The 2019 sightings are shows as red squares and recent records from other spots along this track are arrowed. There are also recent records on the same track, just off this map, to the north.

This track is favourable for Coral-necklace because this track has diffuse shallow water flowing along its length and another part is crossed by a stream, plus it is regularly traversed by cattle.

Table 7. The Coral-necklace plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Notes
SW43203698	DR C.N. FRENCH	PORTHMEOR	14	6	2019	6 PATCHES - JUST STARTING TO APPEAR
SW43203699	DR C.N. FRENCH	PORTHMEOR	14	6	2019	3 SMALL PATCHES - JUST STARTING TO APPEAR

Photo 5. Small Coral-necklace growing along the edge of the water flushed farm track.

Photo 6. Small Coral-necklace growing on the waterlogged farm track.

Table 8. The Coral-necklace assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Illecebrum verticillatum at Porthmeor***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Favourable
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable <5% cover is an inappropriate measure as it invariably grows where there is much more coverage by other species.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Favourable
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Illecebrum verticillatum Coral-necklace

Site 5. Lanyon Stream, SW4234

Coral-necklace has been known at the Lanyon Stream site since 1964 and is the one place in West Penwith where one can guarantee to find it, although numbers fluctuate from year to year. The site is at a point where tractors crossing the stream to access a field to the south west have created a long-standing pond. 2019 was a particularly good year in terms of number of flowering stems counted. However, it appears that the trackway has ceased to be used as a tractor crossing (see photo 9) and the cessation of such mechanical disturbance may have a detrimental impact on the long term future of Coral-necklace here, as the pool may gradually disappear.

Table 9. The Coral-necklace plants seen in 2019.

Grid ref.	Location	Day	Month	Year	Notes
SW42253422	LANYON STREAM	24	7	2019	700 FLOWERING STEMS
SW42243423	LANYON STREAM	24	7	2019	40 FLOWERING STEMS
SW42243422	LANYON STREAM	24	7	2019	3000 FLOWERING STEMS
SW42233422	LANYON STREAM	24	7	2019	150 FLOWERING STEMS
SW42233421	LANYON STREAM	24	7	2019	350 FLOWERING STEMS

Photo 7. The tractor crossing point – the tractor crosses the small stream then turns right along a short waterlogged track to reach the field gate. The stream exit is arrowed.

Photo 8. The waterlogged track containing hundreds of flowering stems of Coral-necklace. The central mound is Coral-necklace dominated.

Photo 9. The end of the track leading to the gate (arrowed). The rank vegetation around the gateway suggests it is no longer in use.

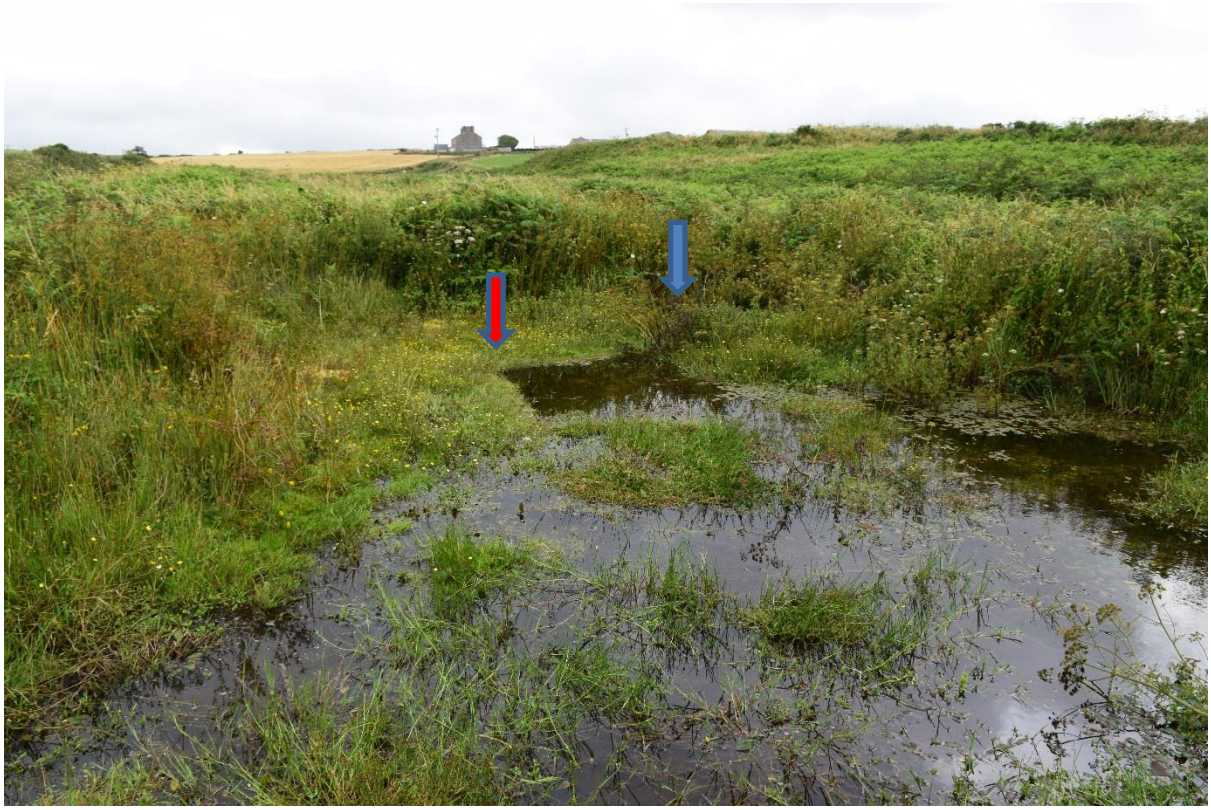


Photo 10. The main pond. The point where the stream enters the pond is arrowed in blue. Coral-necklace grows from the margins into the pond and on the *Sphagnum* raft (red arrow).

Photo 11. Coral-necklace growing out into the pond from the margin.

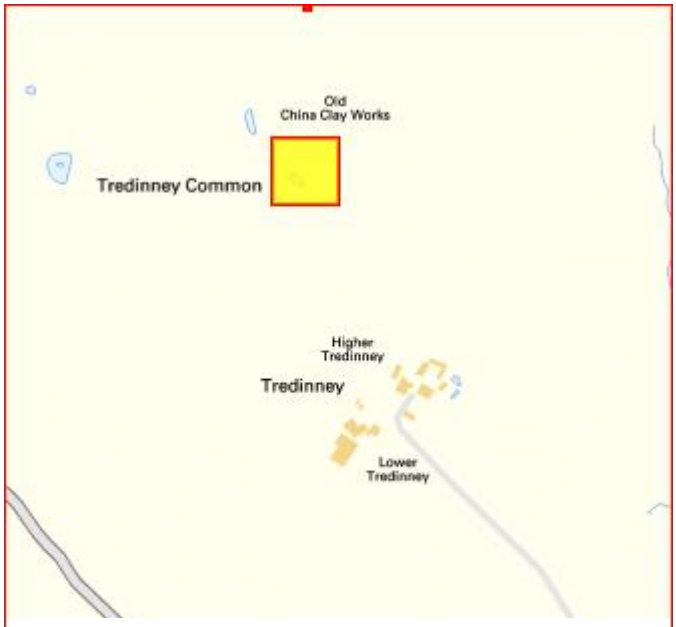
Photo 12. Unusually Coral-necklace grows from the *Sphagnum* raft.

Table 10. The Coral-necklace assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Illecebrum verticillatum***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Currently favourable but it looks like the disturbance by tractor traffic has ceased.
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable <5% cover is an inappropriate measure as it invariably grows where there is much more coverage by other species.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Currently favourable but it looks like the disturbance by tractor traffic has ceased.
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Viola lactea Pale dog-violet

Site 1. Tredinney Common, SW3928



Pale-dog Violet was not found in 2019. The map above shows where it was previously recorded. It was seen by the author in the disused china clay pit in 1991 and 2008, the sides of which have now become overgrown by rank heather and gorse restricting the amount of suitable bare areas. Outside of the quarry, on the Common itself, small amounts of *Viola riviniana* were found along tracks, whilst the bulk of the Common had a closed canopy of heathland plants.

The other site at the top of the map is on Bartinney Downs and was reported separately in 2013 by E. Hewins and G. Groome. In 2019 this area was in better condition than Tredinney Common and is grazed, plus there was a lot of *V. riviniana* present, but no *V. lactea*. It is likely that *V. lactea* is still present in the vicinity because a sizeable patch of the hybrid *V*. x *lambertii* (*V*. *riviniana* x *V. lactea*) was found within 20 metres of the 2013 site.

Several areas of gorse on Bartinney Downs had been brush cut, which has proven a successful technique for the re-appearance of *V. lactea* at Porthtowan, by the National Trust. Unfortunately, at Bartinney, the layer of gorse litter was not raked up so there was little chance of buried *V. lactea* seed germinating.

Photo 13. The china clay pit at Tredinney Common showing the rank heath vegetation.

Photo 14. The rank heathland at Tredinney Common with a closed canopy – totally unsuitable for *Viola lactea* which needs open areas within the heath.

Photo 15. An area of low growing heath and *Molinia*. It also had a closed canopy so provided no opportunity for the growth of *Viola lactea*.

Viola lactea Pale dog-violet

Site 2. Mulfra Hill, SW4535

Pale-dog Violet was not found in 2019. The map above shows where it was previously recorded by E. Hewins in 2013, where a recent burn had opened up the heath. During this survey the area showed signs of the burn, with a few charred gorse stumps. Since 2013 it has revegetated with a bracken/bramble/grassland/heathland mix with no open areas suitable for *Viola lactea*. Some *Viola riviniana* was found in this area.

The slope on the other side of Mulfra Hill, facing eastwards, had open areas but was less heathy. No *V. lactea* was found in that area either.

Photo 16. The area where *Viola lactea* was recorded in 2013.

Photo 17. The heathland on top of Mulfra Hill near the quoit. It lacked the open areas which would favour *Viola lactea*.

Viola lactea Pale dog-violet

Site 3. Woon Gumpus Common, SW3933

Pale Heath-violet was found in 2019, very close to where it had been seen by E. Hewins in 2013. It grew on the side of a little used track which was wide enough for a tractor to use. Pale Heath-violet was not found anywhere else on the Common despite a good search over several days.

Table 11. The Pale Heath-violet plants seen in 2019.

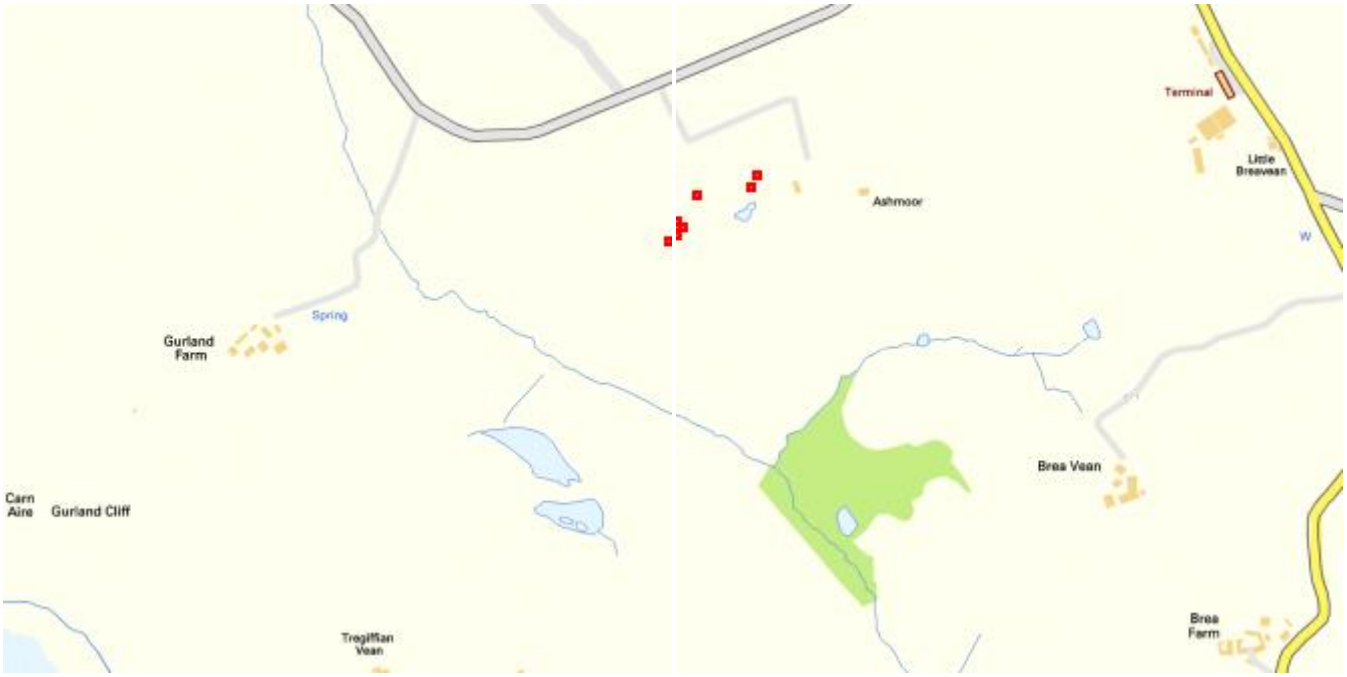
Full grid ref.	Recorder	Location	Day	Month	Year	Notes
SW39343349	DR C.N. FRENCH	WOON GUMPUS COMMON	25	5	2019	12 PLANTS IN TOTAL, 4 FLOWERING

Photo 18. The *Viola lactea* growing along the little used track.

Photo 19. The *Viola lactea* site on the track showing the heathland behind.

Viola lactea Pale dog-violet

Site 4. Nanquidno Downs, SW3728



Whilst searching for *Cicendia filiformis* a new Pale-dog Violet site was discovered in 2019 growing in the horse-grazed field. *V. riviniana* and the hybrid *V*. x *lambertii* (*V*. *riviniana* x *V. lactea*) were also found within this field.

Table 12. The Pale Heath-violet plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Number
SW37012866	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	2
SW36992864	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	2
SW37002865	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	1
SW37002866	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	25
SW37002867	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	4
SW37032871	DR C.N. FRENCH	NANQUIDNO DOWNS	23	7	2019	SEVERAL
SW37122874	DR C.N. FRENCH	NANQUIDNO DOWNS	10	6	2019	40
SW37112872	DR C.N. FRENCH	NANQUIDNO DOWNS	10	6	2019	30

Photo 20. The new, horse grazed, *Viola lactea* site at Nanquidno Downs.

Photo 21. *Viola lactea* at Nanquidno Downs.

Cicendia filiformis Yellow Centaury

Site 1. Nanquidno Downs, SW3728

Cicendia was not found in 2019. The map above shows where it was previously recorded. It is probable that the large square on the map above (the record with a hectare grid reference) is in the wrong place and should be where the 10m record was made.

Cicendia was first recorded here in 1997 when 1-2000 plants were found in a small strip of gravel 'flush' below a pond. 8 plants were subsequently found in 2011 in the horse-poached field near the pond. In 2019 the gravel 'flush' was not found, however, the horse-poached field was in suitable condition and it is quite likely that the Cicendia had yet to appear. Its appearance can depend on sudden rains after a period of drought and it can pop up any time between June and October when conditions suit. On the July 2019 visit, the presence of a large amount of *Radiola linoides* Allseed, a regular associate of *Cicendia,* was a good sign that *Cicendia* may well reappear.

Photo 22. *The Radiola linoides* site and most likely spot for *Cicendia* at Nanquidno Downs.

Photo 23. *Radiola linoides* at Nanquidno Downs.

Table 13. The Yellow Centaury assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Cicendia filiformis***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable.
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	Favourable
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Favourable
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	Favourable
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	Favourable
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable

Pilularia globulifera Pillwort

Site 1. Caer Bran Farm, SW4029

The mapped Pillwort records above show the position of the two ponds at Caer Bran. The Pillwort grew around the margins of the two water bodies and thousands of plants were seen in both ponds.

One particularly interesting find was a few plants of *Bolboschoenus laticarpus*. This native species was not recognised as part of the British flora until 2010 and has since been found at four sites in Cornwall, now including Caer Bran Farm.

Table 14. The Pillwort plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Frequency
SW40142915	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	OCCASIONAL
SW40152917	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT
SW40152918	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT
SW40112919	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FEW
SW40102916	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT
SW40092915	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	ABUNDANT
SW40102914	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT
SW40102913	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT
SW40112912	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	OCCASIONAL
SW40242909	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	ABUNDANT
SW40232911	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	OCCASIONAL
SW40232910	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	OCCASIONAL
SW40242910	DR C.N. FRENCH	CAER BRAN FARM	27	8	2019	FREQUENT

Photo 24. The smaller pond at Caer Bran Farm which has a substantial fringe of *Crassula helmsii* and is completely surrounded by *Salix cinerea* subsp. *oleifolia* and *S. aurita*, which will inevitably shade out and destroy the Pillwort site.

Photo 25. Pillwort growing through *Crassula helmsii in* the smaller pond.

Photo 26. A Pillwort dominated area in deeper water beyond the *Crassula helmsii fringe.*

Photo 27. The larger pond showing the extensive *Crassula helmsii fringe*. The Pillwort mainly grows through the *Crassula* within a foot of the visible water surface.

Photo 27. Pillwort growing through the *Crassula helmsii* in the large pond.

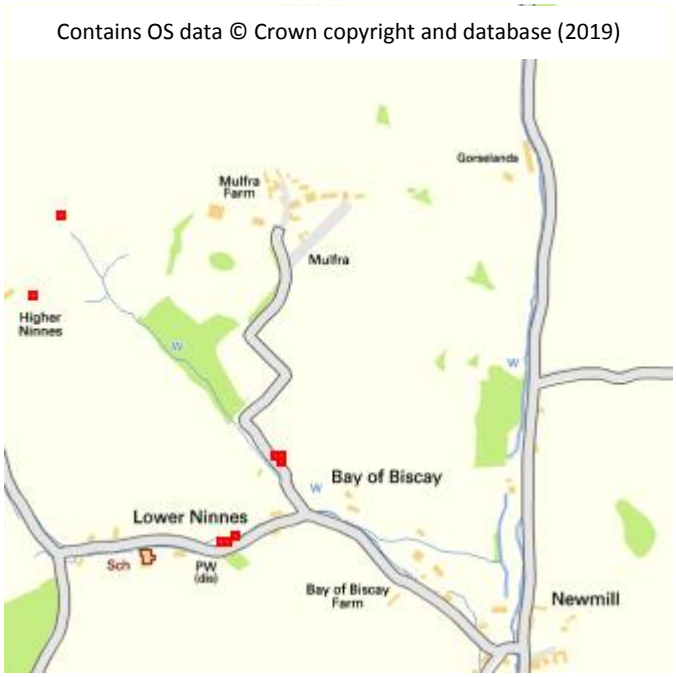
Table 15. The Pillwort assessment.

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
Vascular plant species of ephemeral ponds, ruts and puddles (Suite 11): ***Pilularia globulifera at Caer Bran Farm***	Niche availability	Mapping or visual assessment (either area or length)	Sufficient area of suitable habitat to maintain population. No net loss of area or length of suitable habitat	Baseline extent of available niche may not have been previously mapped or defined.	Favourable as thousands of plants present in both ponds.
	Vegetation structure	Visual assessment	Scruffy margins / bare ground	These species benefit from an element of ground disturbance to provide niches for regeneration (EG. from seed)	This measure is not applicable to Pillwort growing in ponds/lakes.
	Negative indicators: competition	Visual assessment	< 5% cover provided by species other than the target species	These species prefer open ground and reduced competition.	Both ponds had a margin dominated by *Crassula helmsii*. The Pillwort either grew through it or grew on the edge of the *C.*

Interest Feature	Attribute term	Measure	Site-specific Targets	Comments	Assessment
					helmsii where the water deepened. The competition from the *C. helmsii* did not appear to be particularly detrimental given the huge number of Pillwort. In this instance it would be wrong to consider the ponds as unfavourable.
	Negative indicators: shading	Visual assessment	Absence of scrub and tall grass	This species require high levels of sunlight.	The smaller pond is in unfavourable condition. It is surrounded by *Salix cinerea* subsp. *oleifolia* which has restricted the shade-free area considerably. Without control this pond will become unsuitable for Pillwort.
	Disturbance	Visual assessment	Evidence of poaching or other regular disturbance	Increased poaching favours runnel species.	This measure is not applicable to Pillwort growing in ponds/lakes
	Hydrology	Visual assessment	Signs of flooding or direct evidence of dampness in winter	These species require high levels of soil moisture. Seasonal flooding helps reduce competition.	Favourable. The water level in these ponds fluctuates seasonally which is good for Pillwort.

Sibthorpia europaea Cornish Moneywort

Site 1. Higher Ninnes, SW4534



The map above shows the position of Cornish Moneywort records made in 2019. At Lower Ninnes it grew along a 30 metre stretch of road on the side of a roadside ditch through which a stream flowed. At Bay of Biscay it grew on a 20 metre stretch of road at the base of a Cornish Hedge where water flowed downslope on the edge of the tarmac. At Higher Ninnes one clump grew near the base of a Cornish Hedge in a narrow farm track with high hedges, much shade and a damp atmosphere. The other Higher Ninnes site was on the Common growing beneath a *Salix* x *multinervis* shrub in deep shade (see photos 28 & 29).

Table 16. The Cornish Moneywort plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Notes
SW45043456	DR C.N. FRENCH	HIGHER NINNES	22	8	2019	1 PATCH
SW45403432	DR C.N. FRENCH	BAY OF BISCAY	22	8	2019	SEVERAL PATCHES ALONG TINY STREAM BY TARMAC OF ROAD
SW45413432	DR C.N. FRENCH	BAY OF BISCAY	22	8	2019	SEVERAL PATCHES ALONG TINY STREAM BY TARMAC OF ROAD
SW45413431	DR C.N. FRENCH	BAY OF BISCAY	22	8	2019	SEVERAL PATCHES ALONG TINY STREAM BY TARMAC OF ROAD
SW45343420	DR C.N. FRENCH	LOWER NINNES	22	8	2019	SEVERAL PATCHES
SW45323419	DR C.N. FRENCH	LOWER NINNES	22	8	2019	SEVERAL PATCHES
SW45083468	DR C.N. FRENCH	HIGHER NINNES	22	8	2019	1 FT SQUARE PATCH GROWING ON BARE SOIL BENEATH DENSE SHADE OF SALIX X MULTINERVIS

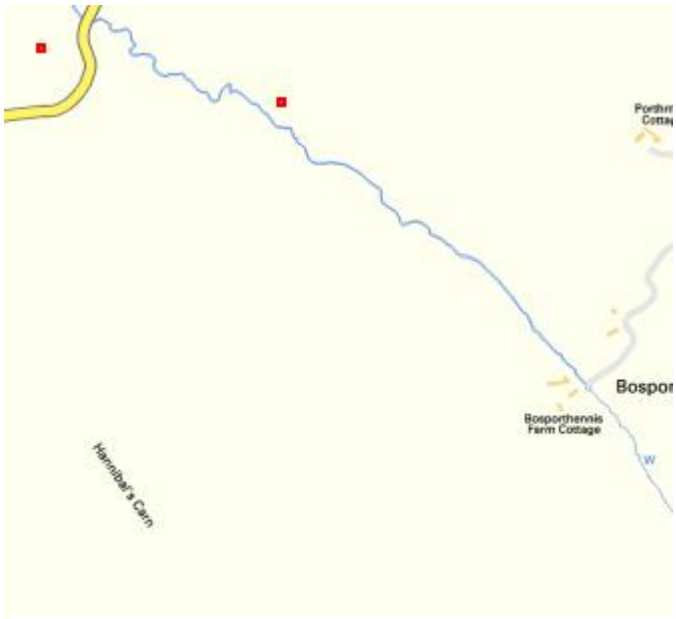
SW45333419	DR C.N. FRENCH	LOWER NINNES	22	8	2019	SEVERAL PATCHES

Photo 28. The Cornish Moneywort site at Higher Ninnes, beneath the *Salix* x *multinervis*.

Photo 29. Cornish Moneywort at Higher Ninnes.

Sibthorpia europaea Cornish Moneywort

Site 2. South of Porthmeor, SW4336



The map above shows the position of Cornish Moneywort records made in 2019. In both cases it grows amongst *Juncus effusus* tussocks. The eastern site is alongside the Coral-necklace track and is trampled by cattle. The other site is on the edge of a sheep-grazed field.

Table 17. The Cornish Moneywort plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Notes
SW43413685	DR C.N. FRENCH	PORTHMEOR	14	6	2019	ONE SMALL PATCH AMONGST JUNCUS
SW43053693	DR C.N. FRENCH	PORTHMEOR	14	6	2019	1FT SQUARE PATCH IN RUSHY AREA

Photo 30. Cornish Moneywort growing amongst the rushes alongside the Porthmeor track.

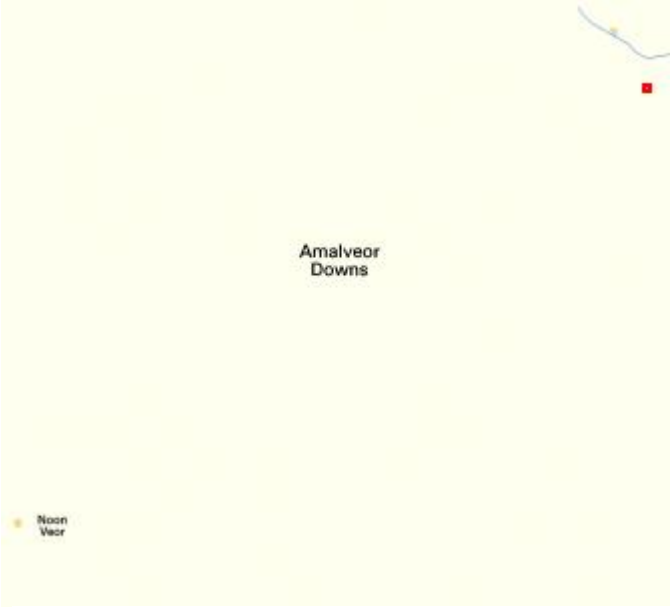
Photo 31. The Cornish Moneywort site growing amongst the rushes alongside the Porthmeor track.

Photo 32. Cornish Moneywort amongst the rushes on the edge of the sheep-grazed field.

Photo 33. Cornish Moneywort amongst the rushes on the edge of the sheep-grazed field.

Sibthorpia europaea Cornish Moneywort

Site 3. Amalveor Downs, SW4737



A new Cornish Moneywort site was found on Amalveor Downs. This consisted of 2 clumps growing on a muddy cattle trodden track on a valley slope, where it grew amongst *Molinia* tussocks.

Table 18. The Cornish Moneywort plants seen in 2019.

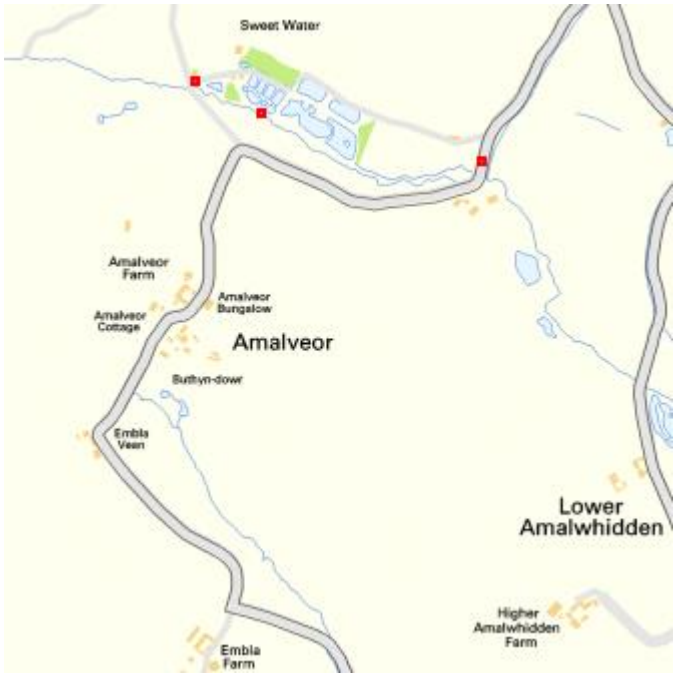
Full grid ref.	Recorder	Location	Day	Month	Year	Notes
SW47963786	DR C.N. FRENCH	AMALVEOR DOWNS	31	7	2019	CATTLE TRACK. 2 CLUMPS

Photo 34. Cornish Moneywort on the cattle-trodden track.

Photo 35. The Cornish Moneywort site on the cattle-trodden track at Amalveor Downs.

Sibthorpia europaea Cornish Moneywort

Site 4. Amalveor, SW4837



The map above shows the position of Cornish Moneywort records made at Amalveor in 2019. One clump was seen on the side of a roadside ditch at Skillywidden and two other clumps were found on the shaded stream bank by the bridge by the lane leading to Beagletodn and where a footpath crossed the same stream to the south east.

Table 19. The Cornish Moneywort plants seen in 2019.

Full grid ref.	Recorder	Location	Day	Month	Year	Notes
SW48283788	DR C.N. FRENCH	NEAR SKILLYWADDEN	31	7	2019	1 PATCH
SW48383783	DR C.N. FRENCH	NEAR SKILLYWADDEN	31	7	2019	1 PATCH
SW48713776	DR C.N. FRENCH	SKILLYWADDEN	31	7	2019	1 PATCH

Photo 36. Cornish Moneywort in the roadside ditch at Skillywadden.

Photo 37. Cornish Moneywort in the roadside ditch at Skillywadden.

Photo 38. Cornish Moneywort on the stream bank near Skillywadden close to the footpath crossing.

Photo 39. Cornish Moneywort on the stream bank near Skillywadden close to the footpath crossing.

Photo 40. Cornish Moneywort on the stream bank by the bridge on the road leading to Beagletodn.

Photo 41. Cornish Moneywort on the stream bank by the bridge on the road leading to Beagletodn.

Sibthorpia europaea Cornish Moneywort

Site 5. Trendrine, SW4739

Cornish Moneywort was re-found at the top of the marsh and spring on the hill slope above Trendrine Farm, growing in deep shade under Osmunda regalis.

Table 20. The Cornish Moneywort plants seen in 2019.

Grid ref.	Recorder	Location	Day	Month	Year	Notes
SW47553933	DR C.N. FRENCH	TRENDRINE	31	7	2019	3 CLUMPS GROWING AT TOP OF MARSH UNDER OSMUNDA

Photo 42. The Cornish Moneywort site at Trendrine at the top of the marsh, growing beneath *Osmunda regalis*.