Survey of Sandhill Rustic *Luperina nickerlii gueneei* on Newborough Warren in 2025

Report No. 965

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A freshly emerged Sandhill Rustic *Luperina nickerlii gueneei*

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Cofnodwyd cyfanswm o 42 o oedolion o wladwr y twyni *Luperina nickerlii gueneei* yn ystod chwiliadau yn ystod y nos gyda thortshis yn Nhywyn Niwbwrch ar 24 a 27 Awst 2025. Cofnodwyd pob gwyfyn yng nghynefinoedd ffiniol rhwng twyni a morfeydd heli, gyda 39 o wyfynod yn nwyrain y system twyni ym Mraich Abermenai a Phenllyn Pysgod, a thri gwyfyn yn y gogledd-orllewin yng Nghefni. Roedd nifer y gwyfynod a gofnodwyd yn is nag yn 2016, ond yn uwch nag yn 2010. Fodd bynnag, nid yw cymariaethau uniongyrchol o reidrwydd yn ystyrlon, oherwydd gwahaniaethau yn yr ymdrech a wnaed yn ystod yr arolwg ac amseriadau. Fel yn 2016, ymddengys bod gwladwr y twyni wedi'i gyfyngu i ddwy ardal, un ym mhob pen o'r system twyni tywod. Ymddengys fod y boblogaeth orllewinol yng Nghefni yn fach ac o dan fygythiad oherwydd erydiad y cynefin a achosir gan safle newidiol sianel yr afon. Mae adfywiad cynefin mewn mannau eraill, yn dilyn stormydd y gaeaf yn y gorffennol, wedi bod yn gyfyngedig. Felly, ystyrir bod poblogaeth y gwyfyn yn Nhywyn Niwbwrch dan fygythiad, yn enwedig oherwydd y cynnydd disgwyliedig o ran amlder a difrifoldeb stormydd y gaeaf oherwydd newid yn yr hinsawdd.

Yn ddelfrydol, dylid mapio ardaloedd cynefin bridio yn nwyrain y safle yn fwy cynhwysfawr nag oedd yn bosibl yn ystod yr arolwg presennol er mwyn caniatáu i ni asesu newid dros amser. Dylid cynnal chwiliadau am wyfynod sy'n oedolion o leiaf unwaith bob pum mlynedd er mwyn caniatáu gwyliadwriaeth barhaus o'r boblogaeth ddynamig hon.

Executive summary

A total of 42 adults of Sandhill Rustic *Luperina nickerlii gueneei* was recorded on torchlight searches on Newborough Warren on 24th and 27th August 2025. All moths were recorded from dune-saltmarsh transition habitat, with 39 moths in the east of the dune system at Braich Abermenai and Penllyn Pysgod, and three moths in the north-west at Cefni. The number of moths recorded was lower than in 2016 but higher than 2010; direct comparisons are not necessarily meaningful however, due to differences in survey effort and timing. As in 2016, Sandhill Rustic appears to be confined to two areas, one at each end of the dune system. The western population at Cefni appears to be small and vulnerable due to habitat erosion caused by the shifting position of the river channel. Habitat regeneration elsewhere, following past winter storms, has been limited. The population of the moth on Newborough Warren is therefore considered to be under threat, in particular due to an expected increase in the frequency and severity of winter storms due to climate change.

Areas of breeding habitat in the east of the site should ideally be mapped more comprehensively than was possible during the current survey, in order to allow assessment of change over time. Searches for adult moths should be undertaken at least once every five years to allow ongoing surveillance of this dynamic population.

1. Introduction

Sandhill Rustic *Luperina nickerlii* (Freyer, 1845) occurs as a number of discrete populations in western, central and southern Europe, each of these being represented by a distinct subspecies. In the British Isles, four subspecies occur at disjunct coastal locations in England, Wales and south-west Ireland (Spalding, 2023), including subspecies *gueneei* on the sandhills of North Wales and Lancashire. In Wales, there are two main populations at Gronant Dunes & Talacre Warren in Flintshire and Newborough Warren on Anglesey. There are also a few records from Morfa Conwy in Caernarfonshire (most recently in 2004) and Kimmel Dunes in Denbighshire (most recently in 2002). The moth has also been recorded once at Rhosneigr Dunes on Anglesey (in 2002). Sandhill Rustic is an independently qualifying feature of Newborough Warren - Ynys Llanddwyn SSSI, Dee Estuary SSSI and Gronant Dunes & Talacre Warren SSSI.

The foodplant of subspecies *gueneei* is Sand Couch *Elymus junceiformis*, with larvae feeding initially inside the stems, and later below ground on the rhizomes (Henwood & Sterling, 2020). Sand Couch growing on pioneer dunes and in dune-saltmarsh transition habitat is favoured. Breeding habitat is inherently dynamic and prone to losses through erosion by winter storms, as well as gains through accretion.

Detailed surveys of Sandhill Rustic at Newborough Warren NNR were carried out by Ian Wallace and family in 2010 and 2016, using torchlight searches to locate adult moths. The 2010 survey comprised a search of the entire dune system coastline, revealing a total of 12 adult moths at eight discrete locations (Wallace, 2011). These ranged from Braich Abermenai and Penllyn Pysgod in the east to Cefni dunes in the north-west, and included moths at Ro Bach in front of the forest and at the northern end of Ynys Llanddwyn (Figure 1).

The 2016 survey produced much higher counts of Sandhill Rustic moths than the 2010 survey, but these were from more limited areas of the site. In total, 149 adults were recorded from two core areas: 121 moths at Penllyn Pysgod and Braich Abermenai in the east, and 28 moths at Cefni Dunes and saltmarsh in the north-west (Figure 2). In the other areas occupied in 2010, in front of the forest, the breeding habitat had been largely destroyed by winter storms in 2013-14 and no moths were recorded (Wallace *et al*., 2016).

The main aim of the present survey was to establish the continued presence of the moth at the two core areas that were occupied in 2016. This was to be facilitated by mapping the main stands of the foodplant on daytime visits prior to nocturnal searches for adult moths.

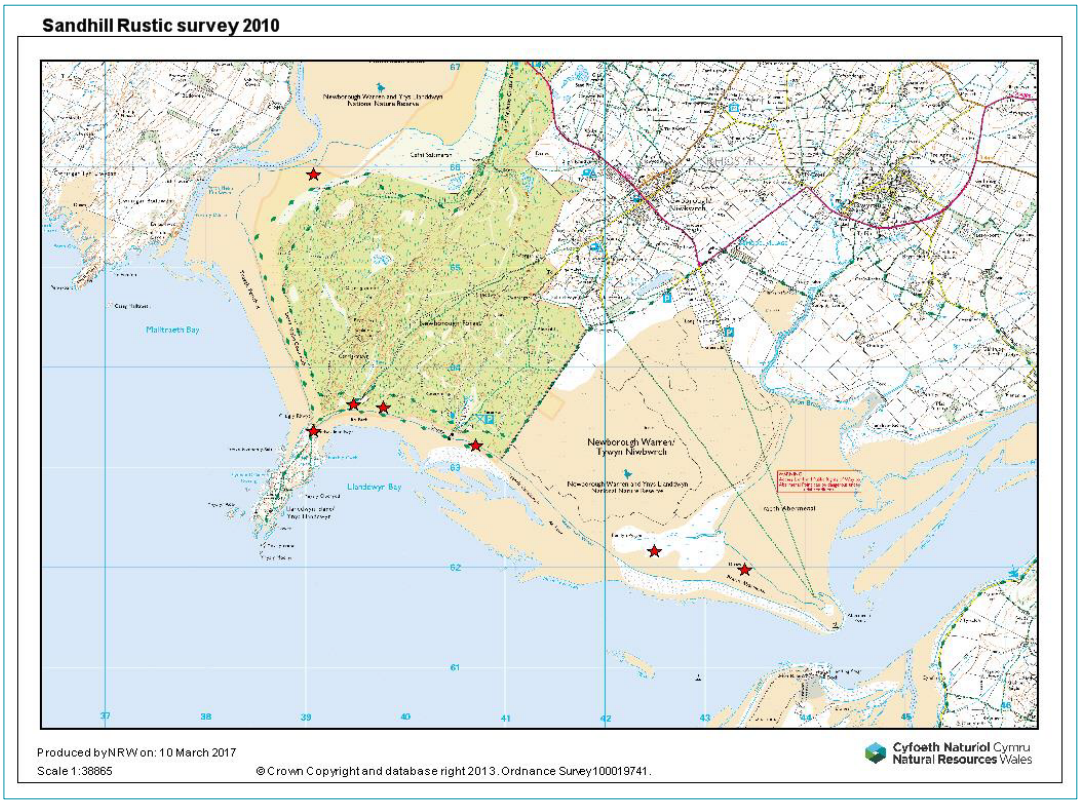

Figure 1. Distribution of Sandhill Rustic on Newborough Warren in 2010 (Wallace, 2011).

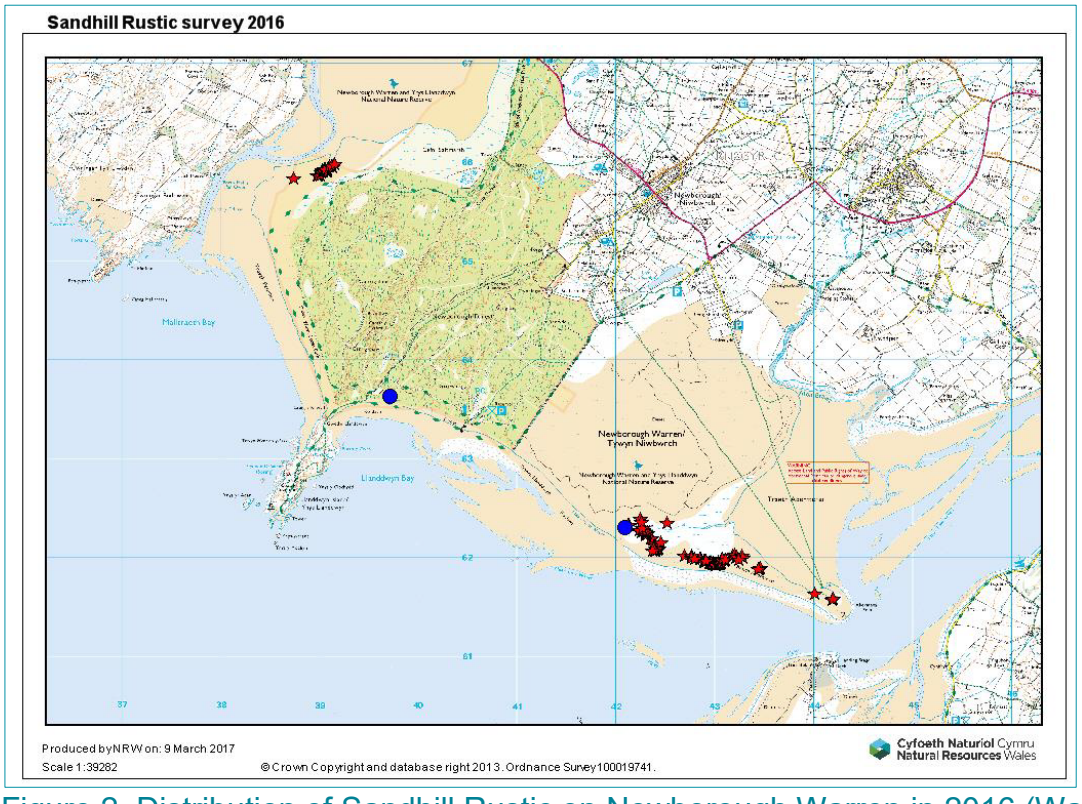

Figure 2. Distribution of Sandhill Rustic on Newborough Warren in 2016 (Wallace *et al.*, 2016).

2. Methods

2.1 Daytime reconnaissance

Daytime reconnaissance visits were undertaken to map the main stands of Sand Couch around the perimeter of the dune system. The areas to the east of the main car park were surveyed on 24 August 2025 and the areas to the west of the car park on 27 August 2025. Stands of the foodplant were mapped using GPS, though at Penllyn Pysgod and Braich Abermenai the distribution of the foodplant was found to be extensive and topographically complex and could only be mapped rather crudely in the available time.

2.2 Adult moth surveys

Night-time searches were undertaken subsequent to daytime reconnaissance visits. The torchlight search method employed was the same as that used in the 2010 and 2016 surveys; this method was developed by Spalding for monitoring populations of Sandhill Rustic subspecies *leechi*, which uses the same foodplant in Cornwall (Spalding, 2015). The method involves using powerful torches to search for adult moths, which almost invariably are found at rest low down in the vegetation rather than in flight. The location of all moths was recorded using GPS. The 2025 surveys were undertaken by George Tordoff and Mike Howe (Natural Resources Wales); further details are provided in Table 1.

Table 1. Details of Sandhill Rustic torchlight searches in 2025.

Date & time	Search area	Weather conditions
24 Aug 25 21:30 to 01:15	Penllyn Pysgod & Braich Abermenai saltmarsh (north-facing side); front dunes (south-facing side)	18°C (start) to 15°C (end); clear skies, still.
27 Aug 25 21:30 to 23:30	Cefni Dunes and saltmarsh	17°C (throughout), partial cloud, windy.

The extensive areas of potential breeding habitat at Penllyn Pysgod and Braich Abermenai prevented a thorough search of all areas from being undertaken in the available time; the easternmost area of habitat was not searched and, in addition, a high tide on the night of the survey prevented some of the raised sandy islands within the saltmarsh from being reached. On 27th August, another high tide prevented the small areas of breeding habitat present on Ynys Llanddwyn from being surveyed. The breeding habitat at Cefni dunes and saltmarsh was surveyed thoroughly.

3. Results

3.1 Habitat

Stands of Sand Couch are mapped in Figure 3 and habitat target notes are provided in Appendix 1. A selection of site photographs is included in Appendix 3.

Figure 3. Distribution of Sand Couch (in yellow) on Newborough Warren in August 2025.

Stands of Sand Couch were found in broadly similar areas to the 2016 survey. The most extensive stands were found in the saltmarsh-dune transition habitat at Braich Abermenai and Penllyn Pysgod. Here, Sand Couch occurs as small, weak-looking plants and is frequent to dominant at the fringes of the dune system and on slightly raised sandy mounds within the saltmarsh. The vegetation ranges from sparse, with much bare sand, to rather dense, with fescue grass mixed with the Sand Couch. On the exposed, southern side of the dune system, Sand Couch is becoming established on new dune formations; in these areas, robust plants grow in loose sand along the front of the mature dunes (see Target Notes 1-3).

To the west of the main car park, there was an absence of any potential breeding habitat along the mature dunes in front of the forest. The dunes in this area have steep fronts and continue to erode. Small areas of habitat were, however, present at the top of some of the

beaches on Ynys Llanddwyn (Target Notes 11-12). North-west of here, at Cefni dunes and saltmarsh, several rather varied stands of Sand Couch are present, including saltmarsh transition habitat and an area of new dune formation (Target Note 13).

3.2 Adult moth counts

A total of 42 Sandhill Rustic moths was recorded on the two torchlight searches; 39 moths were recorded in the east of the dune system at Braich Abermenai and Penllyn Pysgod, and three moths were recorded in the north-west at Cefni Dunes and saltmarsh (Figures 4 & 5; see Appendix 2). All moths were found at rest low down on the foodplant, despite favourable weather and with a number of other moth species being actively on the wing.

All moths were found in saltmarsh transition habitat, where Sand Couch occurs as rather stunted, weak-looking plants. None was found on more robust stands of Sand Couch in areas of active dune formation over loose sand.

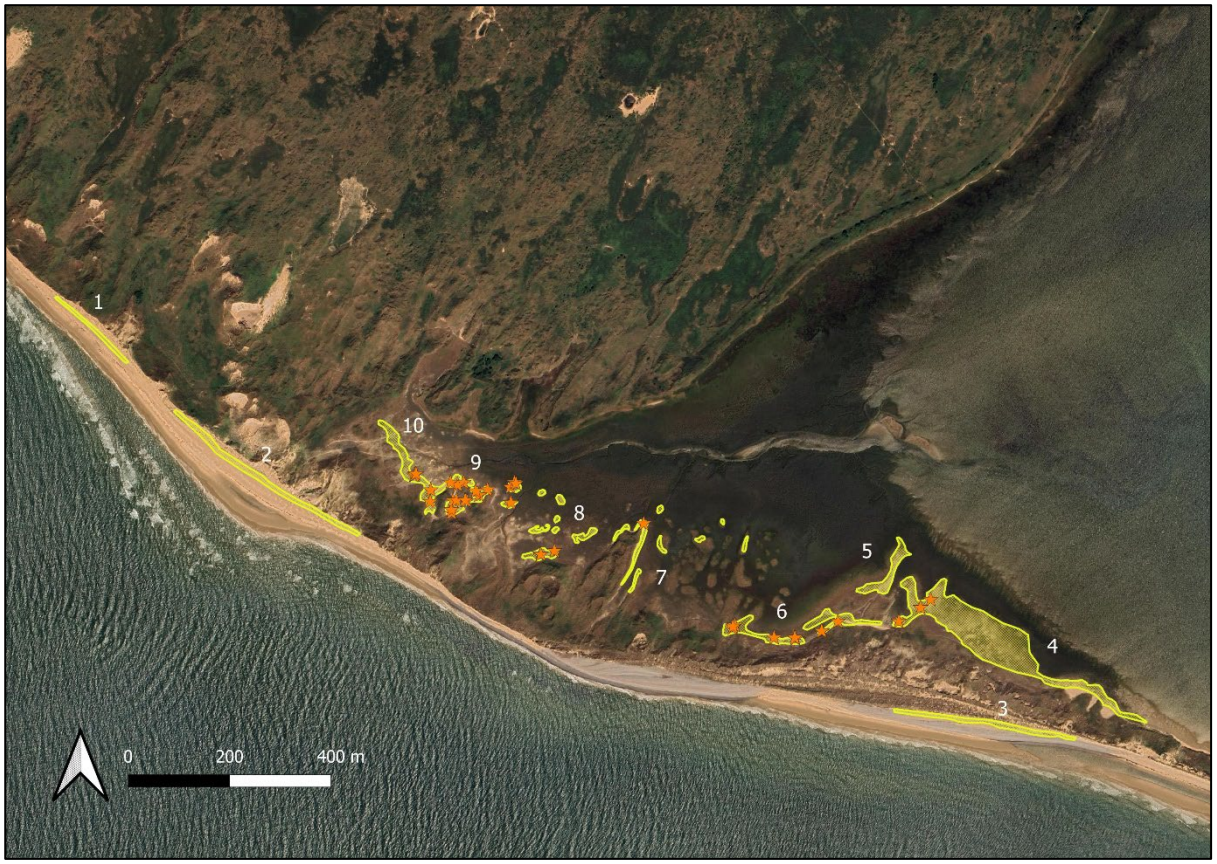

Figure 4. Distribution of Sandhill Rustic moths (orange stars) and Sand Couch (yellow polygons) on the eastern side of Newborough Warren on 24 August 2025. Most of Area 4 was not searched.

Figure 5. Distribution of Sandhill Rustic moths (orange stars) and Sand Couch (yellow polygons) on the north-western side of Newborough Warren on 27 August 2025.

4. Discussion

At a broad scale, the distribution of Sandhill Rustic breeding habitat and populations of the moth are similar to what they were in 2016, in contrast to the major changes observed between the 2010 and 2016 surveys. Sandhill Rustic appears to remain confined to two areas, one at each end of the dune system, with the eastern area having larger areas of habitat and supporting a more robust population of the moth. Fewer moths were recorded in 2025 than in 2016, though this in itself is not a major cause for concern as the two surveys are not directly comparable; survey effort was lower in 2025 (fewer surveyors and fewer survey nights). In addition, it is likely that the 2025 survey took place before the peak of the flight season. All the moths seen were in immaculate condition and several were still expanding their wings, indicating they had just eclosed from their pupae.

Although the counts are not directly comparable between surveys, the small number of moths recorded at Cefni dunes is of concern. The three moths recorded here in 2025 were closer to the forest edge than the 2016 records, which were located in what is now the river channel. The meandering of the river is a natural phenomenon but, with the loss of

other sub-populations to dune erosion following winter storms that are likely to have been exacerbated by climate change, the risk of losing the Cefni population in the future could lead to the moth becoming confined to the more stable saltmarsh transition habitat in the east of the site. However, some proto-dune habitat is being created to the west of the point at Cefni due to sand accretion, and it is possible that the moth may colonise this area.

The 2016 survey report mentioned some evidence of habitat recovery along the south-west dune front (in front of the forest) following the 2013-14 winter storms, but in 2025 there was no evidence of any suitable habitat here; presumably further storms have eliminated any re-establishment of vegetation in front of the steep, eroding front of the mature dunes.

In August 2025, all records of Sandhill Rustic were from saltmarsh transition habitat, where stunted plants of Sand Couch occur over sandy ground that is inundated only occasionally by spring tides. It is not known whether the moth shows a genuine preference for this type of habitat and foodplant condition, or whether it is simply a more stable habitat type that has allowed populations to persist (Wallace *et al*. [2016] comment that the saltmarsh transition habitat at Penllyn Pysgod appeared little changed between 2010 and 2016, despite major changes elsewhere). Wallace (2011) comments that in areas where sand accretion is very fast, the leaf sheaths of Sand Couch are often buried, and that the plants in these areas are usually very vigorous but do not seem to support the moth. It is speculated that this may be due to females having been unable to locate a leaf sheath for egg laying the previous season, or because the rhizomes on which the larvae feed are deeply buried in cold, dense sand. Another factor might be that the saltmarsh transition sites are more sheltered than the exposed south- and west-facing dune fronts.

5. Conclusions and recommendations

While the population at the eastern end of the dune system appears relatively robust, and the habitat here has been relatively stable over the last decade at least, the western population at Cefni is almost certainly declining as habitat is lost to the shifting river channel. There is a real risk of losing the moth from this part of the dune system, and with little evidence of habitat recovery in areas lost to the 2013-14 winter storms it is possible that the moth becomes restricted to the east of the site in future. Indeed, the frequency and severity of winter storms is only predicted to worsen with climate change, which could threaten the survival of the moth at the site in the longer term. While the breeding habitat is dynamic, and some new stands of Sand Couch were observed, these may not be suitable for the moth and even if they are, may not persist for long enough for the moth to colonise and utilise them.

Areas of breeding habitat in the east of the site should ideally be mapped more comprehensively than was possible during the current survey, in order to allow assessment of change over time. Searches for adult moths should be undertaken at least once every five years, to allow ongoing surveillance of this dynamic population.

6. Acknowledgements

Thanks to Dr. Mike Howe (NRW Invertebrate Ecologist) for commissioning the survey, providing information and guidance and for assisting with both night-time survey visits.

7. References

Henwood, B. & Sterling, P., 2020. *Field Guide to the Caterpillars of Great Britain and Ireland.* Bloomsbury Wildlife Guides, London.

Spalding, A., 2015. *Loe Bar and the Sandhill Rustic Moth – The Biogeography, Ecology and History of a Coastal Shingle Bar*. Brill, Leiden.

Spalding, A. 2023. The Sandhill Rustic moth in Britain and Ireland. *British Wildlife*. **34**: 549-557.

Wallace, I.D., 2011. The status and distribution of the sandhill rustic *Luperina nickerlii gueneei* on Newborough Warren – Ynys Llanddwyn SSSI and neighbouring areas in 2010. A report for the Countryside Council for Wales.

Wallace, I.D., Wallace, B. & Wallace, M.C., 2016. A survey for the Sandhill Rustic *Luperina nickerlii gueneei* on Newborough Warren National Nature Reserve in 2016. NRW Evidence Report No. **202**. Natural Resources Wales, Bangor.

Appendix 1. Habitat target notes. See figures 3 to 6 for mapped Areas 1 to 16.

Area	Notes
1	First significant patch of Sand Couch to east of main car park. On shallow new dune formation in front of steep dune front. Sand Couch dominant with some Lyme Grass. Lots of bare sand. 10m wide strip.
2	More extensive area of new dune formation, similar to Area 1, though often steeper and somewhat more established with some Marram. Sand Couch frequent to dominant. 15m wide.
3	Narrow strip of new dune formation, below pebble bank. Sand Couch dominant, sparse to fairly dense, over loose sand. 5-10m wide.
4-10	Saltmarsh transition habitat with Sand Couch frequent to dominant on slightly raised sandy mounds, with more mature Marram dunes to rear. Some areas extensive, not mapped accurately. Sand Couch often mixed with fescue & Sea Purslane – quite sparse in places. More mature areas are fescue dominated.
11	Ynys Llanddwyn. Top of bay, low flat dune with Marram. Sand Couch to front on gentle slope, 5m wide band. Sparse, with bare sand and *Honkenya*. (Bay to south of here has more mature dunes with Marram and little Sand Couch.)
12	Ynys Llanddwyn. Bay on western side of island. Small area of gravelly sand with Sand Couch.
13	Recent dune formation. Flat area with less robust Sand Couch, mixed with Lyme Grass and bare sand.
14	Raised saltmarsh transition, rarely inundated except at front margin. Dry sand beneath. At seaward side, more or less pure Sand Couch. To rear mixed with *Limonium* and Sea Purslane, still with areas of bare dry sand. Flat, with small plants of Sand Couch.
15	Continues NE from Area 14. Partly vegetated, raised round sand mounds (5-10m diam) with Sand Couch or Sea Purslane. Firmer sand, with bare intervening areas (lower) having softer sand. Sand Couch stands of pure, small plants.
16	Long linear strip of Sand Couch, 5m wide, on gentle slope between saltmarsh and raised Marram grassland behind. Sandy, with short Sand Couch plants.

Figure 6. Distribution of Sand Couch (in yellow) on Newborough Warren in August 2025.

Appendix 2. Grid references for 42 Sandhill Rustic adults recorded in August 2025.

Date	Location	Grid reference
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4328062015
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4326061999
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4321761972
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4309761972
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4306661953
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4306561953
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4301361938
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4301261940
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4297161940
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4289461964
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4289461964
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4288961959
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4289061962
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4271462165
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4271462165

Date	Location	Grid reference
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4253862111
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4251062104
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4251162104
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4245262206
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4245162237
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4245962246
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4246262244
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4240662232
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4236562210
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4233562186
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4233562192
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4233862211
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4234562211
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4236262211
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4238962221
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4238362229
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4235962246
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4234762241
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4233362246
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4229462231
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4229362208
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4226162260
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4226362261
24/08/2025	Braich Abermenai & Penllyn Pysgod	SH4226562263
27/08/2025	Cefni dunes & saltmarsh	SH3895665795
27/08/2025	Cefni dunes & saltmarsh	SH3895265815
27/08/2025	Cefni dunes & saltmarsh	SH3895665793

Appendix 3. Site photographs.

Eroding frontal dunes lacking any suitable breeding habitat in south-east of dune system.

Accreting sand with robust Sand Couch in south-east of dune system. No moths were found in this habitat type.

Saltmarsh transition habitat at Braich Abermenai. Sparse Sand Couch mixed with Sea Purslane. Moths were recorded in this area.

Saltmarsh transition habitat at Braich Abermenai. Close to the location of the photo above but this area has denser stands of Sand Couch. Moths were recorded in this area.

Saltmarsh transition habitat at Penllyn Pysgod. Very sparse Sand Couch growing with Sea Purslane. Moths were recorded in this area.

Fenced area (for breeding birds) with developing dune vegetation on Ynys Llanddwyn. This area could not be accessed for survey but may be suitable for the moth.

Top of bay on east side of Ynys Llanddwyn (Target Note 11). This area could not be accessed for torchlight survey but appears suitable for the moth.

Sand Couch on top of low dune to west of Cefni saltmarsh (Target Note 13). No moths were recorded in this area.

Saltmarsh transition habitat at Cefni (Target Note 14). This was the only area in which the moth was recorded at Cefni.

Sand Couch on low sand mounds at Cefni (Target Note 15). No moths were recorded here despite a thorough search.

Band of Sand Couch between saltmarsh and mature dunes at Cefni (Target Note 16). No moths were recorded here despite a thorough search.

Data Archive Appendix

The data archive contains:

[A] The final report in Microsoft Word and Adobe PDF formats.

~~[B] A full set of maps produced in JPEG format.~~

~~[C] A series of GIS layers on which the maps in the report are based with a series of word documents detailing the data processing and structure of the GIS layers.~~

~~[D] A set of raster files in ESRI and ASCII grid formats.~~

~~[E] A database named [name] in Microsoft Access 2000 format with metadata described in a Microsoft Word document [name.doc].~~

~~[F] A full set of images produced in [jpg/tiff] format.~~

[G] Species records are held in the Welsh Invertebrate Database (WID).

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