Six-banded Nomad Bee at Prawle Point (Devon)

MoA Report – 2023

November 2023
Patrick Saunders – Kernow Ecology

Saving the small things that run the planet

Six-banded Nomad Bee at Prawle Point (Devon)

Picture 1: *Long-horned Bee (Eucera longicornis) © John Walters*

November 2023

Patrick Saunders

Kernow Ecology

Six-banded Nomad Bee at Prawle Point (Devon)

Index

Appendix 5. Table 6. Species recorded on the Prawle survey 17

Picture 2: *Long-horned Bee (Eucera longicornis) © Patrick Saunders*

Summary

- Prawle area had a very strong population of Long-horned Bee (*Eucera longicornis*) with highest total count of 270 males.

- The survey did not find any Six-banded Nomad Bee (*Nomada sexfasciata*). The bee has clearly declined post 1990's and it has to be presumed the species is either extinct or on the verge of extinction. It is not clear the exact drivers of this, but it is most likely that poor flower resources over some time reduced the host numbers to a point where the Nomad population was so small and also being isolated it became unviable. Prawle is isolated from any other Long-horned Bee populations, which makes genetic isolation and inbreeding a threat.

- The Prawle observations emphasised the importance of later flowering Vetches - Lathyrus and/or Vicia sp. rather than any specific legume species being important.

- Nest resources probably not limiting. Large areas of soft cliff superficially suitable for nesting with historic nest holes.

- Flower resources very limited. No significant areas of favoured Lathyrus/Vicia sp. are present apart from one meadow area. The surrounding area being either flower poor intensive agriculture with extremely poor field boundaries or Bracken dominated areas. Most of the SSSI units are described as being in unfavourable condition (MAGIC 2023).

- Climate change induced extreme weather events are likely to be a risk. Extreme dry springs have occurred in 2023/24, which could affect pollen and nectar productivity. Erosion of key nests and under-cliff by extreme storms is a risk.

- Prawle area is highly important for a range of other soft-cliff invertebrates. Brown-banded carder Bee (*Bombus humilis)* was not found on the survey and the habitat area is too small to sustain a population. Other species of interest were recorded including the nationally scarce Black Mining Bee (*Andrena pilipes s.s*.), the Orange-horned Nomad Bee (*Nomada fulvicornis*), the Red-data book spider hunting wasp *Cryptocheilius notatus* and the scarce Spotted-vein Cranefly (*Dicranomyia goritiensis*).

- It is critically important to improve flowery sources for the colonies within 1.4km of the colonies through enhanced management agreements and development of additional flower resources wherever possible (Picture 4 – Fig. 1.). Measures for Long-horned Bee could be complementary with actions for Cirl Bunting and a range of other scarce pollinators.

Introduction

The Long-horned Bee (*Eucera longicornis*) is one of Britain's most recognisable and much loved solitary bees owing to the exceptionally long antennae of the males. Once widespread and locally common, it has declined substantially and is now considered to be one of Britain's most declined bees. Today, it is largely confined to the coastline of southern England and south Wales.

The Long-horned Bee typically nests in aggregations in bare or sparsely vegetated light soils, often showing a preference vertical cliff faces. Along the South Devon coast, soft rock cliffs provide especially important nesting habitat for these bees and Prawle Point is of national significance for the Critically Endangered Six-banded Nomad Bee (*Nomada sexfasciata*) – the special cuckoo bee of Long-horned Bee – that is now seemingly confined to this single site in Britain.

Patrick Saunders & John Walters were commissioned by Life on the Edge project and Buglife to investigate the status, habitat and autecological requirements of Long-horned Bee and Six-banded Nomad Bee populations around Prawle Point.

Methodology

The survey sites were visited over 11 days. Surveys were focussed when the Long-horned Bee populations are at peak activity (mid-June to early July).

Picture 3: Common Vetch Foraging habitat

An initial visit at the start of the flight season (31/5/23) identified Long-horned Bee nest aggregations, subsequent survey took place on. 4/6/23, 5/6/23, 6/6/23, 14/6/23, 15/6/23, 16/6/23, 29/6/23, 1/7/23, 7/7/23, 9/7/23 with additional visits by JW on 2/6/23 13/6/23 20/7/23. The survey was also informed by Buglife surveys and previous site visits by Patrick Saunders & John Walters.

The weather conditions during the survey were generally favourable, although some visits in May were less optimal with quite strong easterly winds. May 2023 overall was cool and very dry in Devon/Cornwall. The early visits aimed to identify key nest areas by approximate counts of Long-horned Bee males, subsequent visits monitored the main nests aimed at finding Six-banded Nomad Bee.

The surveyors did walk-though surveys of important flower habitats. Pollen samples were collected from females entering nest aggregations. Soil samples and some other nest site variables were collected. Other bee and wasp species were recorded where possible.

Results

The survey found two strong population clusters (Table. 1.). One around Gara area and another between Sharper Cove, East Prawle. Numbers recorded were higher than suggested in the 2019 survey (Mitson 2019), although this may not be a valid comparison. There were a few small colonies in between. A small population was found near Mercer Cove (Table. 1.), a nest aggregation was not found but some small areas of soft cliff occur nearby (largely in inaccessible vertical cliff), or some or all could represent individuals dispersing from other nests. Mitson (2019) also found some Long-horned Bees in the same area.

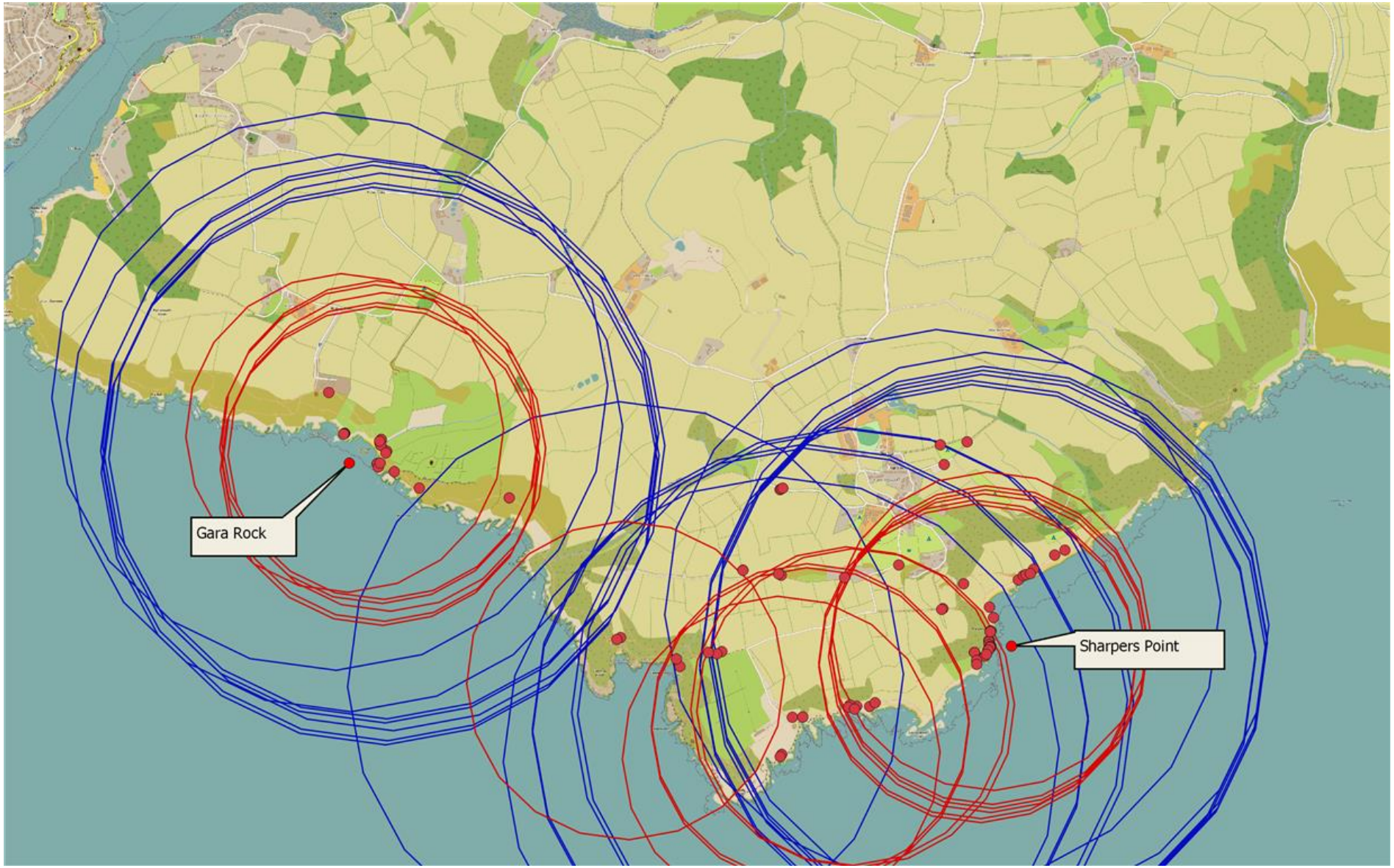
Key foraging habitats were identified at Sharpers Cove Meadow, Copstone Meadow Prawle Point (NT) SX774352, Gara Rock cliff (NT) SX753368 and meadows (NT) SX757369. With some additional important foraging habitats at Mercer Cove SX76663585 Elender Cove area (NT) SX77003569.

Between the main aggregation at Sharpers Cove and Lannacombe in 1993 (Stubbs 1993) three 'good sized' Long-horn Bee colonies were found but no nest aggregations were found on this survey. Flower rich habitats were very poor East of Maelcombe undercliff, but further surveys are recommended in this area.

The Six-banded Nomad Bee could be extinct as the last record was 2019, (only one male) but it is worth continuing surveys in 2024. Historically the species has been recorded between Stinking Cove (Maelcombe) and Prawle Point.

Table 1. 2023 Long-horned Bee nest aggregations The highest recorded counts.
Note. The counts were probably under-estimates. JW estimated 500-800 males at Gara. Females difficult to count. Population monitoring by timed counts or capture-mark recapture is needed.

Key nests	males	females	comment
East Prawle Sharpers Cove	110m (6/6/23)	88f (29/6/23)	A large cluster of nesting aggregations.
Gara Rock	270m (5/6/23)	153f (31/6/23)	A large cluster of nesting aggregations.
Sub nests			
Wollow Cove (or Willow)	7m (4/6/23)	2f (4/6/23)	A small nesting area.
Copstone Cove	24m (4/6/23)	2f (4/6/23)	A small nesting area.
Mercer Cove	36m (15/6/23)	0f	Individuals on flowers probable nest in area.



Picture 4: Fig. 1. Locations of Long-horn Bee records with 800m (Red) and 1.4km buffer (Blue).

Female foraging behaviour was recorded and suggested a strong preference for Lathryus and Vicia rather than general legumes, although foraging observations were not collected systematically. Discriminating in the field between pollen collection (crucial limiting factor) and nectar collection (likely not an important limiting factor) can be unreliable. Published pollen analysis by flower family (Hennessy 2020) confirmed a strong association with Legumes but the only analysis by pollen species Saunders (2020) found a smaller group with the legumes mainly Lathyrus and/or Vicia sp to be most important. Pollen collection on Restharrow (*Ononis repens)* was also often observed at Prawle. Males were observed patrolling Kidney Vetch (*Anthyllis vulneraria*) and Bush Vetch (*Vicia sepium*) which are also of some importance at Cornish sites (Saunders 2020). Pollen samples were also collected, and some future reporting is planned.

Table 2. 2023 Long-horned Bee Female Foraging observations

flower	
Common Vetch (*Vicia sativa*)	11
Narrow-leaved Everlasting-pea (*Lathyrus sylvestris*)	52
Meadow Vetchling (*Lathyrus pratensis*)	2
Restharrow (*Ononis repens*)	9
Tufted Vetch (*Vicia cracca*)	27
Bramble (*Rubus fruticosus agg.*)	1
Total Result	102

Picture 5: Long-horned Bee collecting *Restharrow (Ononis repens)*

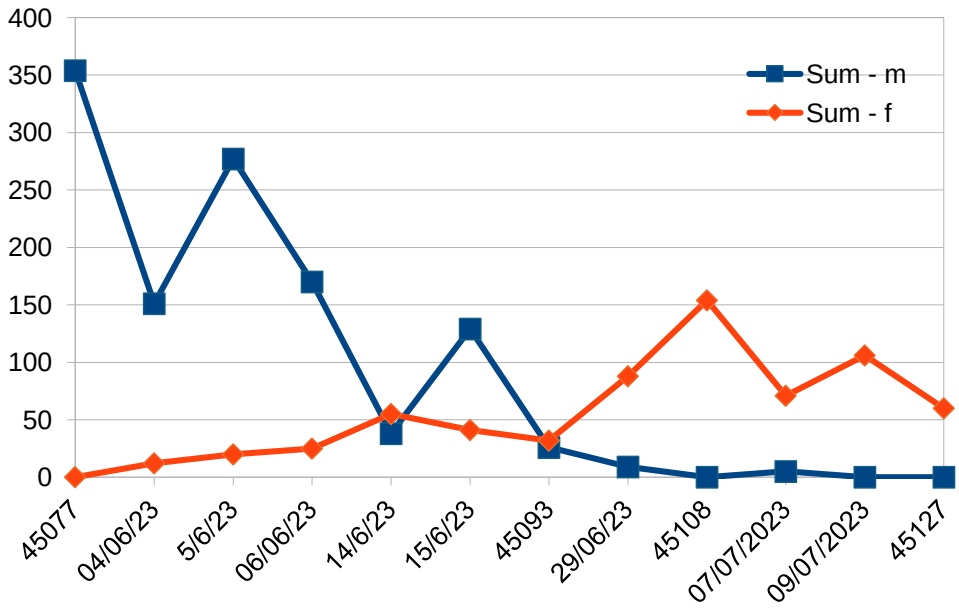
No females were observed collecting pollen on Common Bird's-foot Trefoil (*Lotus corniculatus*) despite it being probably the most abundant legume in the coastal edge habitats. Tufted Vetch and Meadow Vetchling were very scarce only found in any quantity in one field, although occasional odd plants were scattered in hedgerows and scrub edges. Narrow-leaved Everlasting-pea was only found on the edge of the undercliff. Restharrow was quite abundant but only in very restricted patches, such as the undercliff at Gara. Restharrow was very rare in fields, apart from one field near the Coastguard cottages. White Clover (*Trifolium repens*) was probably the most abundant legume in the whole area, on some Cornish sites this plant is very important, but no females were observed to use it at Prawle, although use of clovers is more likely to be missed as they were scattered throughout inland semi-improved pastures across the survey area.

Greater Birds-foot Trefoil *(Lotus pendunculatus*) Red Clover (*Trifolium pratense*) was occasionally present and are used in Cornwall. Small flowered legumes including Lesser Trefoil (*Trifolium dubium)* and Medicago sp. were sometimes frequent in field edges, these legumes are sometimes used in Cornwall, but are unlikely to be very important. Pale Vetch (*Vicia lutea*) was found in Sharpers Cove Meadow (SX78433567). This plant may be used but was not observed. Males were observed on wide range of plants but may not indicate pollen preferences.

The period of July/ August is particularly important both as period of peak foraging activity and more limited pollen resources. Many common legumes such as White Clover usually have a flowering peak slightly earlier.

Bramble collection was observed at Prawle. The author has observed this in Cornwall and suggests this could be an indication of poor legume resources (Saunders 2020).

Fig. 2. Phenology of records



The survey recorded female activity throughout the survey area (Fig 1.). The paucity of suitable habitat in the area meant survey cover of important areas was good, although all secondary habitats inland were not possible to survey (see appendix for key areas). Most of the secondary habitats such as agricultural habitats inland were scanned at a distance for large flowering stands.

The survey did get some valuable observations which can inform (or infer) foraging distance, an extremely important factor in conservation targeting.

A female (or possibly 2 females) was found on two occasions foraging on Meadow Vetchling in the same road verge near East Prawle at approx. 1.1km/1.2km from the nearest 3 nest sites. This was very interesting and useful indication of foraging range. Most Long-horned Bee females were recorded within 800m of the coast which was consistent with Cornish observations (Saunders 2020).

800m and 1.4m was applied as a buffer to the records (map 1.). This is an estimated figure of optimal and maximum foraging range to be used to inform conservation delivery. Quantifying foraging range is very difficult and questionable.

Nest observations

The nests where mainly clustered in discrete areas (Sharpers Cove and Gara Rock) with large sections of cliff which looked superficially similar not occupied. Some unoccupied areas such (Langerstone Point) were peppered with old holes which also suggests historically the population was larger and more extensive, but it is likely there are climatic and soil suitability factors which are also very important.

Picture 6: Sharpers Cove nest site

Long-horned Bee nests were mainly found on vertical cliff areas dominated by bare ground, usually having a south to east aspect, although a range of micro aspects were found.

Nest aggregations mainly occurred within finer silt and clay often as a layer between strips having more large stones or rubble, probably being classed as Loess deposits. Usually sites were almost totally un-vegetated but one nest aggregation (Gara Rock East) did occur in steep slope of short maritime grassland with less than 5% bare ground.

Nest sites in Cornwall usually are vertical cliffs often with loess type deposits superficially similar to Prawle. Loess soil types in Devon and Cornwall typically have high clay and silt content (Catt & Staines 1982). The bee does nest in flat compacted bare-ground in Cornwall, such as a well walked area on SW coast-path on one site. On one site nesting was found in an almost flat garden lawn with almost no bare ground. In Cornwall they also use finer more friable areas of clay or silt, on several sites mining spoil-heaps are used and one site china clay waste.

Nests (with larvae) are very vulnerable to destruction by storm surges as they are usually situated in tight aggregations in soft material. This has been observed in Cornwall and is an issue with some sites where the bees are mainly restricted to one area at the high water mark. At Prawle there was no observation of recent damage. At the Cornish sites the most damaging storm events are not annual. Climate-change induced increased frequency and severity of storm events needs further monitoring this site.

The nest requirements of ground nesting bees is a field with little published research. More research is needed. Soil samples were taken and some future reporting is planned on soil types and nest classification.

Discussion

Clearly there has been decline in the population of Six-banded Nomad Bee since the 90's. Between 1970's-93 the bee was present from Lannacombe to Prawle.

The Long-horned Bee records and frequency of unoccupied nest holes suggest that population could have been more extensive with larger aggregations away from Sharpers Cove in Lannacombe and possibly Copstone, but numbers at Sharpers Cove were still good. Mitson suggests numbers have possibly increased since 2017 (2019). In 2014 at Sharpers Point numbers were not noticeably different from 2023 but on this visit flower resources were very poor and even worse than 2023 around Sharpers Cove and Langerstone Point.

In 2023 Gara supported the largest population of Long-horned Bee. Mitson (2019) suggests the Gara colony is a recent site and Stubbs (1994) found none west of Mercer Cove despite surveys including Gara Rock. Spooner also did record Hymenoptera at Gara between 1940-84 but not Long-horn Bee. It would be very surprising either recorders missed such large colonies of the bee on visits.

Pollen resources are confined to very small areas with much of the surrounding landscape having either intensive farming or flower-poor scrub habitats. *Lathyrus* and/or *Vicia* sp. was very rare and even the usually ubiquitous White Clover was not found in great quantities. The bee is large and probably a strong flyer. It was travelling some distance to find Meadow Vetchling (c.a. 1.2km), but in doing so was unlikely to have much scope to "fuel up" on the way, as the landscape in-between was very legume poor, making such journeys probably very inefficient.

I would infer from Stubbs (1993) and 1888-1914 25 inch maps. Scrub succession has increased between the 1900's to present day within SSSI area from Gammon Head to Gara and much of the slopes such as Woodcombe, Maelcombe, and Lannacombe. Stubbs suggests these areas include flower-rich grassland mosaics, whereas now they are largely very dense flower poor scrub habitats in some cases developing secondary woodland.

There is little research answering the question "How big does the host population need to be to sustain a viable Nomad population?" for any Nomada species. The Nomad has only once been recorded in Cornwall (1909) despite a cluster of colonies some being large, in West Cornwall. A study of the rare Tormentil Nomad Bee (*Nomada robertjeotiana*) at a Cornish site from 2016-23 (Saunders 2023) found the mean ratio of nomad to host of 0.22 (The most frequent host to nomad ratio being in the range of 4-1 or 5-1). The rarity of Six-banded Nomad Bee and small number of records could suggest the nomad needs a huge population of the host across multiple sites. More research is needed.

It seems possible that there has been some recent recovery in the population, but this has been balanced with increased isolation of the population. The Nomad may have been vulnerable for some time having a small population size making recovery from "bad years" and/ or expanding to new sites difficult.

Targeted Conservation measures at Prawle last recorded area for the Six-banded Nomad Bee are urgent and necessary for this species and other threatened species in this area.

Additional Observations

The right balance of too much/too little management is very important, Lathyrus and/or Vicia are more vulnerable to grazing and/or cutting than prostrate legumes such as Clovers and Birds-foot Trefoils, but also can be negatively affected by scrub/bracken succession.

This difficult dilemma was apparent at Gara Rock as summer grazing was a valuable intervention to control Bracken, but the timing (early/mid-June) was not ideal as the cattle browsed all the Common Vetch as it was flowering (see appendix for recommendations). This site had some large areas of unimproved grassland rich in Lotus and Trifolium, with some small areas of Common Vetch (although almost no preferred later Lathyrus and/or Vicia sp).

Brown-banded Carder Bee was recorded at Prawle in 2022 but was not found on this survey. Brown-banded Carder Bee has a similar requirement for high quality legume rich habitats, but in landscape scale quantities. Brown-banded Carder Bee has suffered a dramatic decline in South Devon, pre 1970's the species was frequently recorded on the South Devon coast and Dartmoor, post 2000's there are only a handful of records (Saunders 2019). It is highly unlikely there is sustainable population at present in Prawle as flower habitats are too small and isolated. The one record of Bilberry Bumblebee (*Bombus monticola*) at Prawle, which almost certainly dispersed from Dartmoor, shows how caution is needed in interpreting single records.

Other species of interest were recorded including the nationally scarce Black Mining Bee (*Andrena pilipes s.s.*), the Orange-horned Nomad Bee (*Nomada fulvicornis*), the Red-data book Spider hunting wasp *Cryptocheilius notatus* and the scarce Spotted-vein Cranefly (*Dicranomyia goritiensis).*

Picture 7: Horsey Cove Under-cliff habitat was rich, but inland was either species poor grassland or poor scrub habitats and secondary woodland.

References

Catt, J. A. and Staines, S. J. 1982. Loess in Cornwall. Proceedings of the Ussher Society. 5 (3), pp. 368-375.

Hennessy, Georgia & Goulson, Dave & Ratnieks, Francis. (2020). Population assessment and foraging ecology of nest aggregations of the rare solitary bee, Eucera longicornis at Gatwick Airport, and implications for their management. Journal of Insect Conservation. 24. 10.1007/s10841-020-00266-8.

Mitson, C. 2017. South West Bees Survey Report: Nomada sexfasciata and Eucera longicornis at Prawle Point, South Devon 2017, Buglife, Peterborough

Mitson, C. 2019. South West Bees Survey Report: Nomada sexfasciata and Eucera longicornis at Prawle Point, South Devon 2019, Buglife, Peterborough

Saunders, P. 2018. Conservation of the Long-horned bee in Cornwall. British Wildlife 29: 321-327.

Saunders, P. 2019. Bumblebees of Devon, an atlas and conservation guide, BBCT, Stirling. http://kernowecology.co.uk/Publications/BBCT135.pdf

Saunders, P. 2020. The Ecology and Conservation of the Long-horned Bee Eucera longicornis. https://www.researchgate.net/publication/347358127_The_Ecology_and_Conservation_of_the_Long-horned_Bee_Eucera_longicornis

Saunders, P. 2023.Tormentil Nomad Bee survey of Land's End Cornwall Wildlife Trust. (Unpublished report).

Stubbs, A.E. (1994) 1993 Terrestrial Invertebrate Survey of Prawle Point-Start Point SSSI, South Devon. English Nature Research Report 126. English Nature, Peterborough.

Appendix

Table 3.

Sharpers Cove Meadow (SX78433567)	Extremely important, with Common Vetch (Vicia sativa), Narrow-leaved Everlasting-pea (Lathyrus sylvestris), Meadow Vetchling (Lathyrus pratensis), Restharrow (Ononis repens), Tufted Vetch (Vicia cracca)	Develop management plan/agreement. Appropriate management should involve a late cut or graze and some Bracken scrub control.
NT Gara Rock (SX754368)	NT grazing of unimproved grassland and scrub mosaics. Large area of Common Bird''s-foot-trefoil (Lotus corniculatus) and Clovers Trifolium, with some Common Vetch (Vicia sativa) **SX753369**. Some large and very important areas of grassland in the valley **SX760369**-**SX760369**. The undercliff had abundant Kidney Vetch (Anthyllis vulneraria) and Restharrow (Ononis repens).	Develop Long-horn Bee management plan/agreement. The NT grazing very beneficial but unsuitable timing as cattle browsed a great deal of Common Vetch in June. May be difficult compromise as Bracken control needed, which may have to involve some spring grazing. April/May probably a better time or Roll/cut sections. Needs management discussion with site managers.
Green lanes and Verges	Verges very scrubby or Bracken dominated and generally legume poor. Some flower resources particularly Bush Vetch (Vicia sepium). All the road verges and green lanes need more suitable management and could become very important. Small amounts of Lathyrus and/or Vicia sp. throughout the road network. Quality poor due to lack of cutting and probably also nutrient enrichment from agriculture.	The green lane close to the colony **SX782359** was cut but too early. Develop management advice. Needs more frequent cut and removal in spring or autumn (not June/early July)
Copstone Meadow, Prawle Point (NT?) SX774352	The grazing in NT units appears to be sympathetic. Some important areas of unimproved grassland with legumes particularly Restharrow **SX774352** and Meadow Vetch in another field **SX77523540.** Small but very important area of Tufted Vetch and Meadow Vetchling recently fenced out **SX77583538**.	Develop management plan/agreement. with NT. Ensure areas fenced out have some rotational cutting.

Coast path zones	Either side of coast-path extremely important as in places the only available flowers but confined to very narrow strip. Some Narrow-leaved Everlasting-pea, Tufted Vetch and Meadow Vetchling and other legumes.	Improve coast path cutting regime and boost with green hay or planting where possible.
Maelcombe house	Two unimproved or semi-improved meadows with some legumes and light grazing **SX78833620 SX78953624**. Currently not very important but could be enhanced.	Develop management plan/agreement.
Scrub areas	Ungrazed blocks of Bracken dominated habitats below East Prawle **SX780355** and near Maelcombe **SX788363**. Could be enhanced as marginal for agriculture.	Develop management plan/agreement. Narrow-leaved Everlasting-pea (Lathyrus sylvestris) very suitable for Bracken dominated habitat. 2 yr. old plants can be planted in tree tubes.
Mercer Cove area	Important area of unimproved grassland with abundant Common Bird''s-foot-trefoil (Lotus corniculatus) probably under conservation management **SX76663585**. Some other rich areas of maritime grassland, coast path edges and unimproved field edge habitats Elender cove area **SX77003569**.	Develop suitable management plan. Enhance and protect small area of Lathyrus at **SX77033571**

Recommendations by habitat

Table 4.

Meadows	Conservation grazing	Grazing beneficial but timing important. Lathyrus and/or Vicia sp. Very intolerant of summer grazing. Avoid grazing June or July. But may be difficult compromise, some spring summer grazing may be needed to control bracken.
	Hay/Silage	Cut very late. Ideally after August or very early before June. Zones of scrub or Bracken control may be needed in late cut areas. Or rotate Bracken control over several years.
	Green hay	Introduce Lathyrus and/or Vicia sp. by green hay or plugs
Improved grassland	Boost with agricultural legumes	Simple cheap agricultural grazing Clover mixes will be useful. But ideally mix with other agricultural annual Vetches such as Fodder Vetch (Vicia villosa) or Hungarian Vetch (Vicia pannonica). Broad Beans (Vicia faba) may be useful.
margins/bird seed	Boost with agricultural legumes	Ideally include other agricultural vetches such as Fodder Vetch (Vicia villosa) or Hungarian Vetch (Vicia pannonica) in bird seed margins or conservation headlands.
Scrub bracken	Suitable management	Light grazing in autumn/spring and rotational scrub control. Everlasting pea is particularly suitable for Bracken areas.
Gardens		Introduce ornamental everlasting peas and Narrow-leaved Everlasting-pea to gardens
Lanes		Road management. Cut and remove verges autumn or before June

3. Highlighted actions for specific areas not mentioned above.

Devon Birds Prawle Point reserve, SX77413543
Tussocky grassland, scope to boost with Everlasting peas and management recommendation needed.

HM Customs Coastguard radio site- verge area SX78103670 and lawn area SX78103668
Currently amenity grassland, scope to cut later to improve habitat or create focal wildflower lawns

Small Bracken field near Sharpers SX78293589
Unused Bracken area, no agricultural value, scope to adopt by conservation group

Field with occasional camping/caravans and low intensity agriculture below East Prawle SX78083613 Viewed from distance mostly semi-improved, lots of patches of Lotus suggesting could have some value and scope to tweak management.

4. Six-banded Nomad Bee records.

Table 5.

Location		Recorder	Comment
Coastpath above Willow Cove SX777354	2019	A. Whitehouse & C. Mitson	6/6/2019 One male. Det. S. Falk
Sharpers Cove	2017	C.Mitson	14.06.2017 A fresh individual carrying *Meloe proscarabeus triungulins* John Walters 17.06.2017 Brief individual sighting around a nest entrance Philip Strange 21.06.2017 Two individuals spotted Lee Dingain and Rachel Ward 23.06.2017 Four sightings, unsure if four different individuals Philip Strange 13.07.2017 One individual at main nest site around midday John Walters
Sharpers Cove	2014	P. Saunders	7/7/14, At least one female shown to me by S. Falk, at dense Eucera aggregation
Prawle Cliffs	1993	A. Stubbs	20/6-24/6/93 3 Sharpers head, one Willow cove (Wollow) SX778354, 3 cliffs west of Malcombe sand (Maelcombe) to stinking cove (Maelcombe) SX792363 SX793364 SX794365, (1989 16 females mainly near Sharpers cove)
Sharpers point	1985	G.M. Spooner	20/7/85 several females, esp near Sharpers Point around Eucera burrows,
Prawle cliffs to Langerstone	1984	G.M. Spooner	p.104 3/7/84 almost a glut of females at cliff exposures, outnumbering Eucera, some males at ger. sang with host, worn male at Langerstone point.
Prawle Cliffs	1981	G.M. Spooner	14/7/81 eastern part 2 females at earth exps with Eucera burrows. West cliff, skirt of 3 females at Eucera burrows.
Prawle Cliffs	1979	G.M. Spooner	6/7/79 At least 6 females exploring Eucera burrows undercliff, seen also by Alan stubbs and L. Packer.
Lannacombe	1979	A. Stubbs	A female at Eucera aggregation SX801371

Table 6. Species recorded on the Prawle survey by PS and JW

Vernacular	Taxon	Status
Rosechafer	*Rose chafer*	
A cranefly	*Dicranomyia goritiensis*	RDB3
A cranefly	*Dicranomyia ornata*	Scarce
A cranefly	*Geranomyia unicolor*	
a digger wasp	*Astata boops*	
Slender Digger Wasp	*Crossocerus elongatulus*	
4-spotted Digger Wasp	*Crossocerus quadrimaculatus*	
a digger wasp	*Lindenius albilabris*	
Sand Tailed Digger Wasp	*Cerceris arenaria*	
a digger wasp	*Cerceris ruficornis*	
Ornate Tailed Digger Wasp	*Cerceris rybyensis*	
Bee Wolf	*Philanthus triangulum*	RDB2
Red Banded Sand Wasp	*Ammophila sabulosa*	
Trimmer's Mining Bee	*Andrena trimmerana*	Nb
Sandpit Mining Bee	*Andrena barbilabris*	
Cliff Mining Bee	*Andrena thoracica*	
Black Mining Bee	*Andrena pilipes sens. str.*	Nb
Small Gorse Mining Bee	*Andrena afzeliella*	(recent taxon split)
Yellow-legged Mining Bee	*Andrena flavipes*	
Green-eyed Flower Bee	*Anthophora bimaculata*	
Long-horned Bee	*Eucera longicornis*	Na
Black-thighed Epeolus	*Epeolus variegatus*	
Painted Nomad Bee	*Nomada fucata*	Na
Gooden's Nomad Bee	*Nomada goodeniana*	
Davies' Colletes	*Colletes daviesanus*	
Hairy Yellow-face Bee	*Hylaeus hyalinatus*	
Green Furrow Bee	*Lasioglossum morio*	
Smeathman's Furrow Bee	*Lasioglossum smeathmanellum*	
Long-faced Furrow Bee	*Lasioglossum punctatissimum*	
Box-headed Blood Bee	*Sphecodes monilicornis*	
Sickle-jawed Blood Bee	*Sphecodes puncticeps*	
Shiny-vented Sharp-tail Bee	*Coelioxys inermis*	
Large Sharp-tail Bee	*Coelioxys conoidea*	
a cuckoo wasp	*Trichrysis cyanea*	
a cuckoo wasp	*Hedychridium ardens*	
a spider-hunter wasp	*Cryptocheilus notatus*	RDB2
a spider-hunter wasp	*Dipogon variegatus*	
Red Legged Spider Wasp	*Episyron rufipes*	
a mason wasp	*Ancistrocerus gazella*	
Spiny Mason Wasp	*Odynerus spinipes*	
Six-belted Clearwing	*Bembecia ichneumoniformis*	Nb
Thrift Clearwing	*Pyropteron muscaeformis*	Nationally Scarce
Dark Green Fritillary	*Speyeria aglaja*	
Humming-bird Hawkmoth	*Macroglossum stellatarum*	Migrant