A Survey of Breeding Whinchats in Pembrokeshire 2012.

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Commissioned by Pembrokeshire Coast National Park Authority.

Contents

Executive Summary

The Whinchat *Saxicola rubetra* is a migrant breeding species favouring open country such as heathland, moorland, bogs, marshes and light scrub. The latest atlas of breeding birds in Pembrokeshire 2003-07 (Rees et al 2009) found that their distribution had been reduced by 70% in comparison to the 1984-1988 atlas. And this range contraction is accompanied by a 50% population decline. The species is currently amber listed and a local priority species.
The aims of this survey are to record in detail the current breeding status and distribution of whinchats in Pembrokeshire, and to relate this distribution to habitat. This will lead to a greater understanding of habitat requirements and enable practical land management advice to aid their conservation within the PCNP.
A set of sites where whinchats have bred in recent years within the PCNP were surveyed; St David's Head, Dowrog, Fagwr Goch, Carn Ingli, Fronlas and Brynberian Moor. Several additional sites were visited on an ad hoc basis. These were; Pantmaenog, North Preseli east of Brynberian, Mynydd Crwn, Afon Wern.
An initial visit was made to each of these sites between 20th May and 10th June and follow up visits were made between 19th June and 5th July.
No breeding Whinchats were found at either of the St David's sites and neither did they appear at the two farms south of the Preseli ridge; Fronlas or Fagwr Goch.
A total of 29 pairs were found spread across all the remaining sites with 15 of these at Brynberian Moor.
14 nests were located and based on 11 successful nests for which brood size was known (across all sites) productivity was 4.5 young per nest.
All breeding pairs occupied a mosaic of bracken, low bushes of various species and a wet area such as a gully or flush.
The reasons for the decline in the local Whinchat population were considered. Productivity data are represented by a small sample but based on this surveys results it appears to be near the national average for first broods. There was unoccupied but apparently suitable breeding habitat, suggesting that recruitment is low, possibly caused by factors away from their breeding sites. There was no evidence that Stonechats displaced breeding Whinchats and predation was considered to be an insignificant factor.
Practical habitat management to favour breeding Whinchats is discussed. The current grazing regime at Brynberian Moor is already well suited to maintaining good whinchat habitat, so it is not necessary to change current practise. Targeted burning of bracken near gullies and mature gorse is likely to be detrimental to the population. Creating small isolated pockets of Whinchat habitat at new sites will probably be ineffective as long as there remains unoccupied suitable habitat.
Whinchats are a very easy species to census, with a single visit made to their breeding sites any time between mid-May and the end of June producing identical and reliable results, and by ringing chicks during June and July a very valuable data set can be established over a few years.

Introduction

The Whinchat *Saxicola rubetra* is a widespread breeding species favouring open country such as heathland, moorland, bogs, marshes and light scrub. Whinchats are generally seen prominently perched on low vegetation such as a gorse bush or bracken from where they drop down to capture invertebrates and their larvae taken both from the ground and off foliage. They also fly up to take aerial invertebrate prey in the style of a flycatcher. Whinchats are sub-Saharan migrants arriving on their breeding grounds in UK from late April and departing by September.

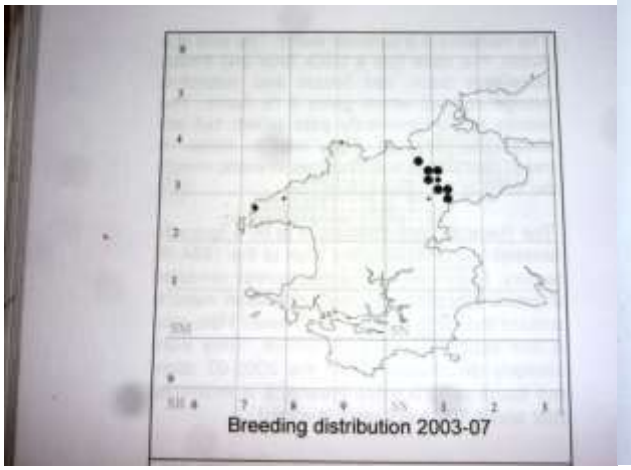
Local ornithologists in Pembrokeshire have recognised a serious decline in the Whinchat population over the last two decades, and this decline is recognised nationally and it is now an amber-listed species of conservation concern (2009).

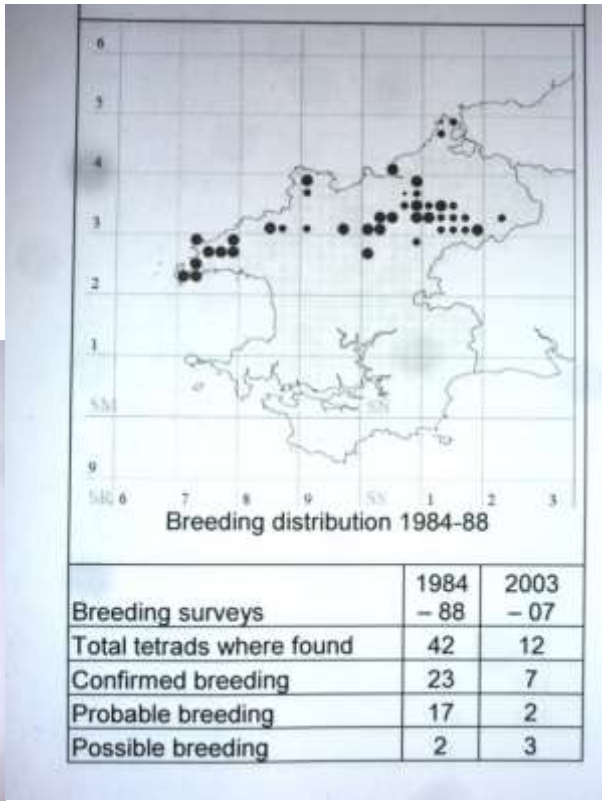
There have been records of breeding Whinchats in Pembrokeshire dating back at least to the 1800s and Rev. Murray Mathew in 1894 recorded it as a summer visitor and stated; “We have found that it is pretty generally distributed, and have seen it on the Precelly Hlils at Rosebush, on Cuffern Mountain, at St. David's, at Stone Hall, where we have seen the nest, although Mr. Dix wrote that the Whinchat was decidedly rare in his district, which was the north-eastern corner of the county immediately adjoining Cardiganshire.”

The Whinchat was regarded as a scarce summer resident by Lockley et al. (1949), and Saunders (1976) added that it was of rather patchy distribution; both indicated that breeding was confined to the north and east of the county.

The Breeding Birds Survey of 1984-1988 Donovan J.W. & Rees G.H (1994) found about 50 breeding pairs “in the boggy areas which encircle the Preseli Mountains but a few pairs were dotted across suitable habitats, extending westwards to the coast, where some were also found breeding in bracken-clad cliff-top areas including those at Cemaes Head and Treginnis.”

The latest atlas of breeding birds in Pembrokeshire 2003-07 (Rees et al 2009) found that their distribution had been reduced by 70% in comparison to the 1984-1988 atlas. Those which were still breeding were in the Preseli Hills, with probable breeding on the St. David’s peninsula. It was estimated that a maximum of 25 pairs were nesting by the end of 2007. Reasons for the decline were thought to include conditions on the wintering grounds and changes in agricultural practice. Over-grazing in localities formerly occupied by whinchats may have encouraged colonisation by Stonechats in some areas.





Breeding surveys	1984 – 88	2003 – 07
Total tetrads where found	42	12
Confirmed breeding	23	7
Probable breeding	17	2
Possible breeding	2	3

Figure 1 Comparison between distribution of breeding Whinchats 1984 to 1988 and 2003 to 2007(Rees et al 2009).

European bird trends show that Whinchat numbers have fallen by 55% across Europe since 1982, perhaps mainly due to agricultural intensification, but this decline could also point to problems on the shared wintering grounds of birds from different European breeding areas.

The aims of this survey are to record in detail the current breeding status and distribution of whinchats in Pembrokeshire, and to relate this distribution to habitat. This will lead to a greater understanding of habitat requirements and enable practical land management advice to aid their conservation within the PCNP.

Methods

A set of sites where whinchats have bred in recent years within the PCNP were selected as follows; St David's Head, Dowrog, Fagwr Goch, Carn Ingli, Fronlas and Brynberian Moor.

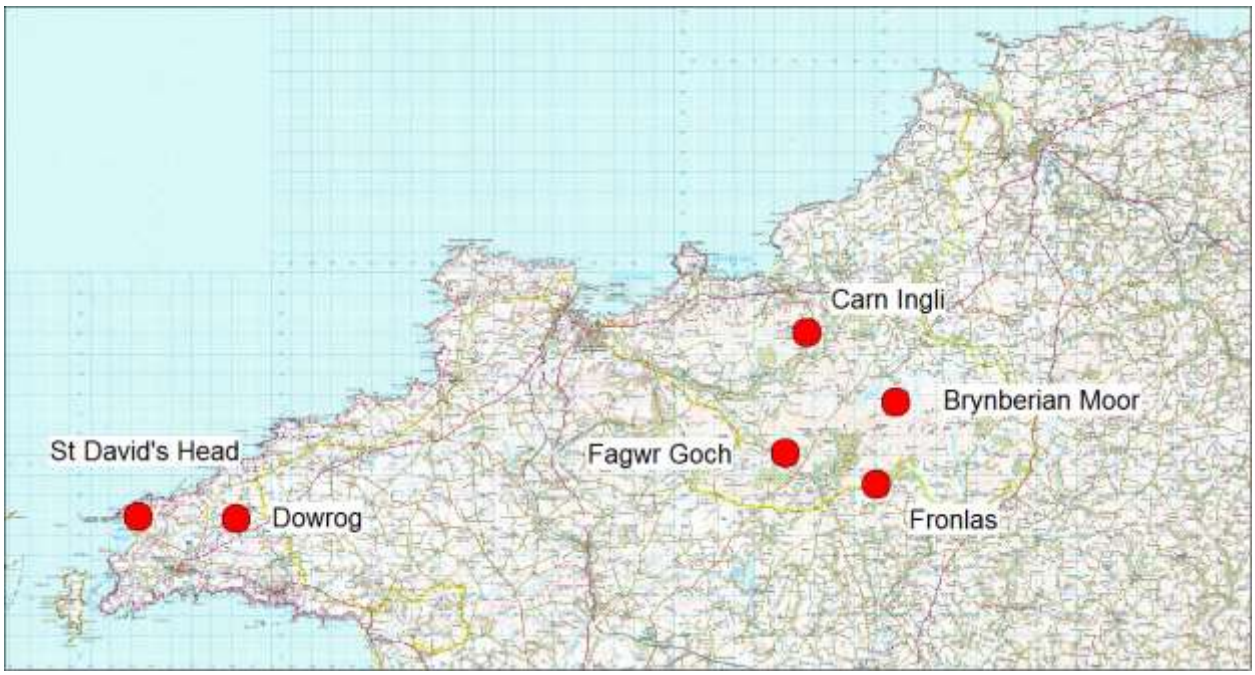


Figure 2 Distribution of sites surveyed for breeding Whinchats in 2012.

An initial visit was made to each of these sites between 20th May and 10th June.

All the suitable habitat within the sites was visited and inspected for presence of breeding whinchats. The survey work took place in dry weather with light winds (F4 or less), as it in these conditions that whinchats are most easily detected.

On locating a suspected breeding territory (indicated by the presence of a singing male or pair), the site was watched for a period of up to an hour to record behaviour and habitat details and to confirm breeding if possible. Territories were plotted using hand held GPS and these positions were then later transferred to GIS software.

If Whinchats were located on the initial visit then a second visit was made to the site to try and locate the nests. The timing of the second visit was planned to be between 11th and 20th June to coincide with the time that they would be expected to be feeding nestlings, though 2012 was generally a late season, and follow up visits were made between 19th June and 5th July. Nests were located by watching adults and following them back.

All chicks from nests located during the follow-up visit were ringed, and all details were entered into the BTO nest recording database using IPMR.

Although not included in the original methodology several additional sites were visited on an ad hoc basis, because they looked promising habitats. These were; Pantmaenog, North Preseli east of Brynberian, Mynydd Crwn, Afon Wern. At these sites breeding evidence was sought and if possible, nests were found and details were included in the productivity data.

Results

Current status

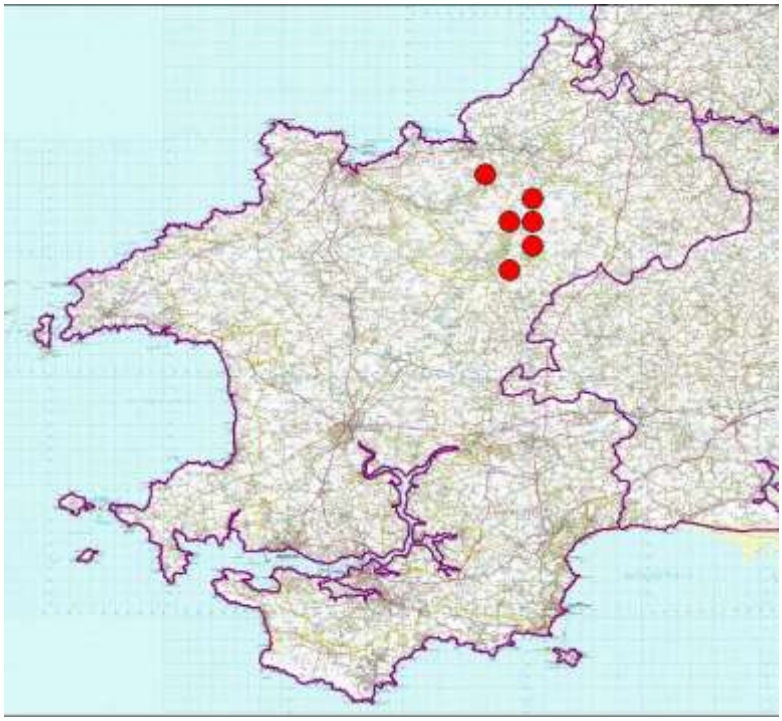


Figure 3 The distribution of breeding Whinchats at tetrad level.

The results of the survey are summarised in table 1 below. As previously suspected, no breeding whinchats were found at either of the St David's sites and neither did they appear at the two farms south of the Preseli ridge; Fronlas or Fagwr Goch. At Brynberian Moor, a site where they have been regularly recorded in the breeding season, a total of 15 territories were found, and this total is the highest count ever at this site, though as far as is known, this is the only dedicated survey ever undertaken across the whole site. Carn Ingli held two pairs, and an additional 12 territories were located elsewhere on Mynydd Preseli. The total of 29 pairs is very close to the 25 pairs estimated to be breeding in the county in the latest Pembrokeshire Breeding Bird Atlas (2003-2007).

Site	Number of territories	Nests found
Brynberian Moor	**15**	**9**
Carn Ingli	**2**	**1**
St David's Head	**0**	
Dowrog	**0**	
Fagwr Goch	**0**	
Fronlas	**0**	
Pantmaenog	**1**	
North Preseli	**2**	
Mynydd Crwn	**5**	**3**
Afon Wern	**4**	**1**
Total	**29**	**14**

Table 1. Summary of survey results across all sites.

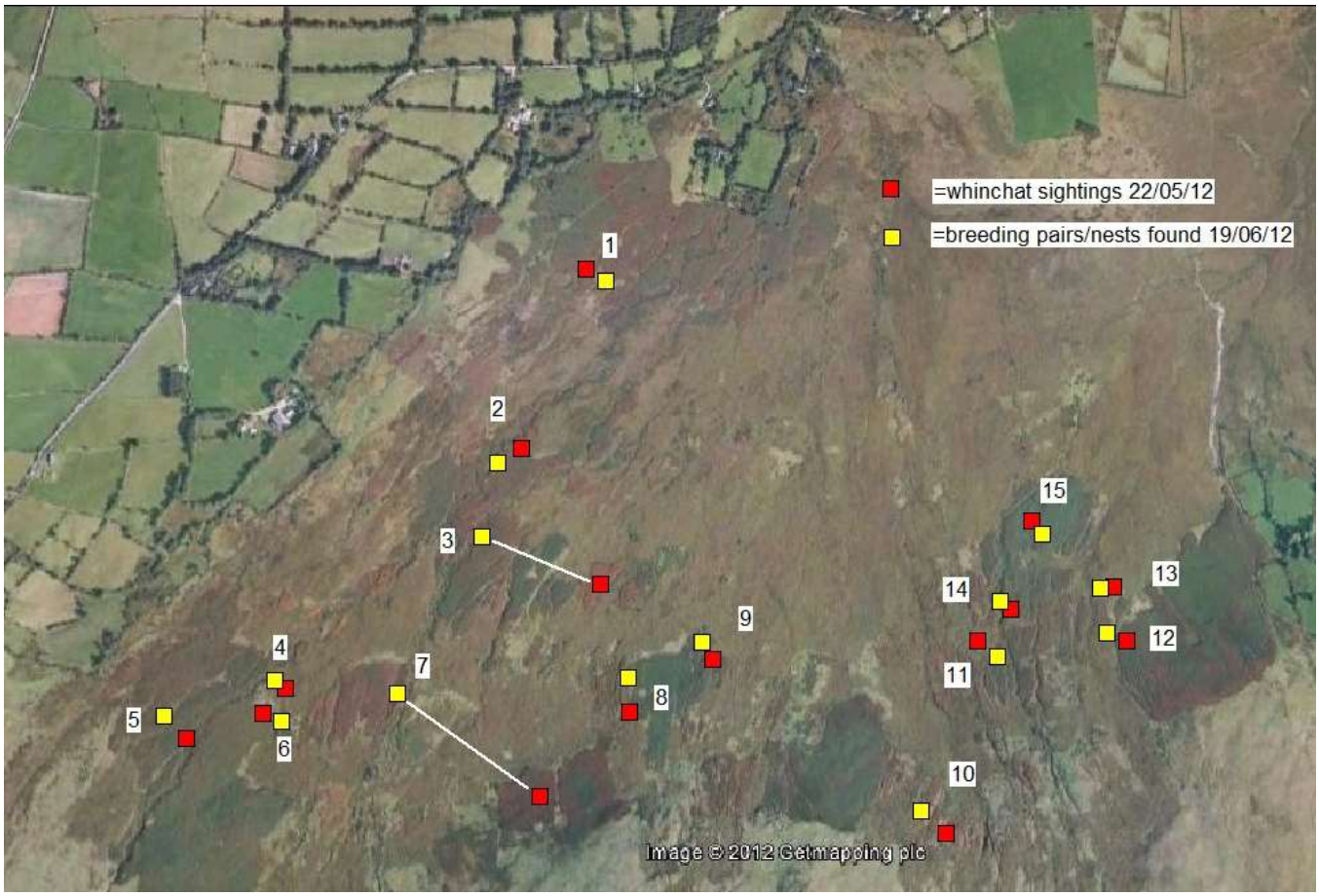


Figure 4. The distribution of breeding pairs at Brynberian Moor

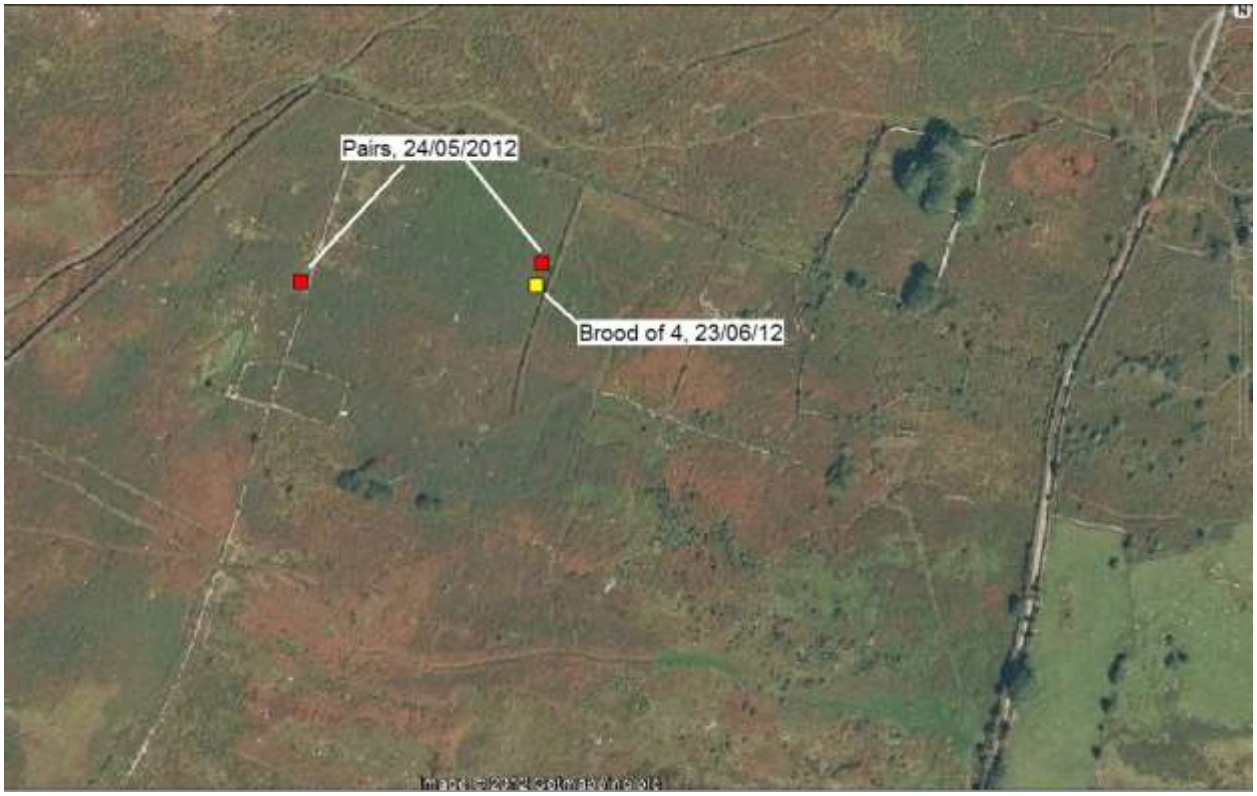


Figure 5 Map of breeding Whinchats at Carn Ingli

The survey results at Brynberian Moor are plotted in figure 4 above. The red squares indicate the recorded GPS positions of either pairs or singing males on 22/05/2012. The yellow squares are numbered 1 to 15 and represent either the positions of actual nests, if found, or positions of sightings if no nest could be located. These findings are summarised in table 2 below.

Pair	Description/notes	eggs	chicks
1	Breeding pair. Nest in Bracken, c 20m from a gully. Scattered mature gorse and holly bushes present. Four young out of a clutch of five hatched but were predated before fledging by a ground predator.	5	0
2	Breeding pair. Nest not found. Fledged young were seen on 05/07/2012, c 15m from a gully. Bracken dominant with scattered mature gorse, rowan and holly bushes present.		3+
3	Unpaired male. One of two apparently unpaired males that were recorded, though it is possible that females were on nests. Bracken dominant, scattered mature gorse present, c 10m from stream.		
4	Breeding pair. Nest found with five eggs, but later predated by a ground predator, c 5m from stream in bracken, with leggy gorse and low willow bushes.	5	0
5	Breeding pair, nest not found. Male was alarming as if nest nearby. Bracken dominant with scattered mature gorse, and a wet flush/ditch.		
6	Breeding pair, nest in a Molinia tussock. A mosaic of light bracken cover, wet flush dominated by Polytrichum commune and Sphagnum sp. And tall gorse. A clutch of six and five fledged	6	5
7	Unpaired male. One of two apparently unpaired males that were recorded, though it is possible that females were on nests. Bracken dominant, scattered mature gorse present, c 20m from gully.		
8	Breeding pair, nest in grass at the foot of a leggy gorse bush. Bracken present but not dominant, mature gorse and open grass mosaic, c 10m from gully.		3
9	Breeding pair, nest in bracken. Bracken dominant with scattered mature gorse, and a wet flush c 10m away.		6
10	Breeding pair, nest in bracken. Bracken dominant with scattered mature gorse, and a wet flush c 5m away.	6	6
11	Breeding pair. Nest not found. Fledged young were seen on 05/07/2012, c 10m from a gully. Bracken dominant with scattered mature gorse and holly bushes present.		2+
12	Breeding pair, nest in bracken. Bracken dominant with scattered mature gorse, and a wet flush c 10m away.		6
13	Breeding pair, nest in bracken. Bracken dominant with scattered mature gorse, and a wet flush c 20m away.		6
14	Breeding pair, nest in bracken. Bracken dominant with scattered mature gorse, and a stream c 5m away.	5	4
15	Breeding pair. Nest not found. Fledged young were seen on 05/07/2012, c 10m from a gully. Bracken dominant with scattered mature gorse and small hawthorn bushes present.		3+
16	Territorial pair on 24/05/2012, not relocated on 23/06/2012.		
17	Breeding pair, nest in bracken near a gully with running water with numerous perches either along fence lines or walls and scattered Gorse and Rowan		4

Table 2 Field notes and productivity for the pairs at Brynberian Moor and Carn Ingli

The habitat used by whinchats showed remarkable consistency across the sites. All breeding pairs occupied a mosaic of bracken, low bushes of various species and a wet area such as a gully or flush. There were several areas with extensive bracken which were not used by whinchats, but these patches contained no bushes or gullies. Nest sites were always close (<=20m) to an area of permanent wetness, and most were in bracken litter. The bracken stands that were used always had at least 50% grass and bracken was never completely dominant to the point of being a monoculture. Favoured nest sites were where bracken litter formed islands of 1 to 2 metre in diameter near a stream. On two occasions they also used similar situations structurally with grass at the bottom of an open and straggling gorse bush, and a tussock of Molinia surrounded by Polytrichum commune and Sphagnum sp. All nests were very well hidden and on more than one occasion presented an overwhelming challenge to the fieldworkers in spotting them.

Stonechat pairs were also recorded (though not mapped) and these were all associated with areas of dense and fairly young gorse which had obviously been managed by burning. Several interactions between the two species were witnessed and clearly there is tension between them, but in all bar one case it was the whinchat that was the aggressor.

Associate species weren't recorded in any systematic way but it was very clear that whinchat pairs invariably shared their territories with reed bunting, linnet, whitethroat and sometimes redpoll. Meadow pipits were also present but they are so ubiquitous on these sites that any apparent connection is meaningless. They never overlapped territories with stonechats.

Figure 5 Brynberian Moor

Productivity.

Based on 11 successful nests for which brood size was known (across all sites) productivity was 4.5 young per nest. This is lower than the national average of 5.1 (BTO birdfacts website), though the 2012 breeding season proved to be an extremely poor one for many small passerine species, so it can be considered reasonable. Two nests were known to have been predated by a ground predator.

Figure 7 A brood of Whinchats almost ready to fledge

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Discussion

Current status and distribution

The results of the survey highlight the fact that whinchats have suffered a significant range contraction within Pembrokeshire and that Brynberian Moor is now the key breeding site for the species, with 50% of the county population. The total of 15 pairs was higher than previously recorded at the site but it has probably never been surveyed completely prior to 2012. A partial survey in 2008 returned eight territories where there are now nine, suggesting that the population at this site is perhaps stable, though there are some territories in 2008 which were vacant in 2012, and vice versa indicating that the population here is not at the maximum possible. The value of Brynberian moor to whinchats lies not only in the quality of the habitat, but also in the amount of habitat available in a relatively small area. Further, the whinchat is a pioneer species often occupying habitats that are liable to natural succession (such as young forestry) but at Brynberian the habitat has been remarkably stable for many years. This has been achieved by a grazing regime that maintains a consistent pressure resulting in a stable vegetation structure, and a soil geology that dictates a mosaic of wet and dry heath, with a variety of soil depths that keeps bracken and gorse in isolated pockets. The scattering of isolated shrubs such as hawthorn, rowan and holly are also important elements and so too are the abundant gullies and flushes.

However, the Afon Wern on the south of the Preseli ridge held only four pairs where in 1999, there were at least 10 (pers. obs. PJ) with all the missing pairs at the lowest altitudes. Here whinchats used Molinia grassland with scattered Gorse, Salix and Bramble and were often seen to hunt from fence lines (as they formerly did at Dowrog). It doesn't appear that the habitat has changed significantly in the Afon Wern valley, though this subjective assessment cannot be made with confidence as without detailed fieldwork, subtle changes in vegetation structure and species composition can easily go unnoticed. Even so, the most likely explanation for this apparent range contraction and abandoning of this habitat whilst still occupying the bracken/gorse/gully mosaic at Brynberian, is that the population decline is being largely driven by factors not related to these breeding grounds. With insufficient numbers of returning birds to fill all available habitat, they then perhaps prefer to locate near other pairs where the chances of finding a mate, replacing a predated partner and of extra pair copulations are higher. This strategy gives the impression on the ground that whinchats are no longer able to make use of some habitats where in fact they would if there was sufficient recruitment.

Taking the above into account, then it may not be possible to halt the decline simply by habitat measures. However, maintaining the core area for whinchats in the county is vital to any continued breeding presence. This is especially pertinent considering that the Pembrokeshire population is so small and geographically separated from nearest neighbours at Brechfa, Carmarthenshire by at least 40km.

Potential Threats.

Fire

Periodically the moor has been burned as part of management to enhance forage for grazing animals, and to control ticks and in March 2012 the burning was extensive (c350 ha). This affected several bracken patches which were suitable breeding Whinchat habitat on the lower part of the moor, and also killed several low bushes such as Rowan and Holly, altering the structure of habitat near adjacent bracken patches. This has reduced the quality of the breeding habitat at some locations within the Moor. The reasons for such a large area being affected by the burning incident in 2012 was due to the burn becoming uncontrolled during very dry windy conditions. Luckily, for whinchats, the vast majority of suitable habitat remained unaffected, though this was completely by chance. Whinchats were seen to forage in burnt bracken, but burning removes all nesting possibilities, and can generally be regarded as unfavourable. The practise also encourages gorse to dominate if it is repeated regularly, creating habitat far better suited to stonechats.

Figure 8 Good whinchat habitat affected by burning in March 2012

Competition from Stonechats

It has been proposed that some of the whinchat decline may be due to the meteoric rise of the Stonechat (BBS data from BTO website), a species which begins breeding in March and whose territories are already well established by May when Whinchats arrive back from their African wintering quarters. The population rise of Stonechats is almost certainly due to a trend towards milder winters allowing a higher survival rate over winter. Stonechats have been observed being aggressive towards Whinchats, as they were on one occasion during this study, but Whinchats were also witnessed to be aggressive towards other species, particularly near an active nest. Species that were seen to be chased off were Stonechat (juv), Meadow Pipit, Redpoll and Reed Bunting. It was obvious that Stonechats and Whinchats were never sharing the same territory for breeding, but much of this is explained by different habitat preferences; Stonechats like extensive Gorse, especially with dense three to four year old patches, while Whinchats prefer a mosaic of Bracken, stream and bushes. If their territories included Gorse bushes then they were mature and leggy, unlike the rounded structure of Gorse bushes that Stonechats preferred. There was no evidence from this field work that Stonechats present a displacement threat to Whinchats.

Predation

Whinchats are ground nesting birds and so are vulnerable to predation when nesting. Nest predation rates, predator identity and the factors that influence predation are difficult to study in the field as predation events are rarely witnessed. It is possible that predation may play a part in breeding range declines, but evidence is lacking to form any confident conclusions. The range contraction involves an apparent retreat to higher ground which is counter-intuitive in that it could be expected that productivity will be higher at lower altitudes due to more favourable weather and temperature. It may be that predator density is lower in the more exposed and open high ground. It is worth mentioning that both the predated nests recorded in this survey took place in the area that harbours a badger sett and many other potential nest predators including, Red Fox, Domestic Cat, Carrion Crow and Magpie. Higher up the slopes may be a better bet for avoiding predation.

During our survey, we checked nests twice if possible to ensure that nest outcome data were as precise as possible, and out of eleven nests, nine were successful. Other successful pairs were recorded but no nest located, but based on this year's data it appears that nest predation rate is acceptably low, and is unlikely to be driving declines. However, more data are needed to state this confidently.

Figure 9 A well camouflaged Whinchat nest.

Habitat management

Whinchats in Pembrokeshire are nearly all choosing a mosaic of Bracken, Gorse, isolated small bushes and a wet area such as a flush, stream or gully. They are recorded in other habitats such as damp meadows, weedy arable margins, young conifer plantations and Molinia grassland but the survey shows that they overwhelmingly prefer the bracken mosaic described above.

Maintaining such habitat is achieved predominately through grazing at a level which allows the Bracken to exist but never become completely dominant, and allowing the Gorse to become leggy and mature. At Brynberian the conservation interest is diverse and there are other species which are perhaps a priority for which grazing is essential, such as Bog Orchid, Southern Blue Damselfly, and the fact that Whinchats have used this site since at least the 1980's suggest that the current grazing regime is already well suited to maintaining good whinchat habitat, so it is not necessary to change current practise.

Figure 10 Perfect habitat for breeding Whinchats

Whinchats nest on the ground under a tussock of either bracken litter or grass and it is essential that at least some of the bracken forms a litter layer. This can be destroyed by burning so targeted burning of bracken near gullies and mature gorse is likely to be detrimental to the population. At Brynberian it is probable that the spread of bracken is limited by soil depth and drainage, so it is recommended that burning is avoided in the specific areas shown in figure 11.

Figure 11 Areas of perfect whinchat habitat vulnerable to damage from burning

Creating small isolated pockets of Whinchat habitat at new sites will probably be ineffective because there is suitable available unoccupied habitat already, so emphasis is on maintaining good habitat in the core area of Brynberian Moor and perhaps the southern slopes of Mynydd Preseli.

At Carn Ingli Bracken is extensive, but there were only two breeding pairs of Whinchat, both near the stream and wall at the extreme southern edge of the common. The Bracken here has resulted from a set of pastures being left ungrazed for a number of years and is now becoming dominant over a large area. Controlling bracken at this site will have little effect on breeding whinchats, and the element that is missing is a wet feature.

Further study

Although from the present survey it can be fairly confidently stated that major habitat creation will probably be unproductive in increasing the breeding whinchat population, there is still much to understand and confirm. They are a very easy species to census, with a single visit any time from mid-May to the end of June producing identical results, and so can be easily monitored at a basic level. By ringing chicks during June and July valuable data concerning productivity can be collected. Again this is not a massive commitment and the basic census work can be achieved at the same time.

By colour-ringing adults and monitoring survival, the question of whether factors away from the breeding grounds are driving the decline can be answered. This depth of study has a much higher time commitment than the two basic monitoring projects mentioned above but further research work on this species at this level is much needed if the situation is ever to be fully understood.

Figure 12 Ringing a Whinchat chick

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