Oxwich Marsh

Ringing Report 2016

Report to Natural Resources Wales and The Gower Society

10/01/2017

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1 Introduction

Background

1.1 Oxwich Marsh is located on the south coast of the Gower Peninsula, approximately 13 km to the west of Swansea. The 'marsh' supports a range of habitats, including extensive reed bed, scattered scrub and wet woodland, ditches, areas of open water and species-rich grassland.

1.2 From a local ornithological perspective, the populations of reed bed warblers are the most notable feature, as there is very little reed bed in Gower. Reed warbler, sedge warbler and Cetti's warbler all breed at Oxwich, with the former two species also using the reed bed in considerable numbers during passage periods. Other migrant species such as whitethroat, blackcap and chiffchaff hold territory in fringing scrub and woodland.

1.3 Since Gower Ringing Group (Gower RG) began ringing at Oxwich (in March 2013), the effort has been gradually increased year-on-year, and possibilities for collecting data sets on different species have been explored. This has seen us create a variety of different net rides through reed bed, rush pasture and scrub habitats. The work has been supported by Natural Resources Wales (NRW), the land managers, and for the past two years by grant funding from The Gower Society.

Purpose of Bird Ringing

1.4 Bird ringing involves fitting a small metal ring with a unique identification code (a series of letters and numbers) to the leg of a bird in order that information can be collected about its movements upon recapture. Small birds are typically captured using mist nets. These are light nylon nets which are strained between upright poles and held in place with guy lines. Birds flying into the net drop into 'pockets' within it, from which they are then carefully extracted.

1.5 Ringing has a number of aims. These include understanding bird migration i.e. where birds migrate to, where they stage during these journeys, how long it takes them to reach their wintering or summering quarters, and how they move in response to periods of harsh weather or food shortage. Ringing and recapture of individual birds therefore allows us detailed insight into bird movements.

1.6 Ringing also enables understanding of how long individual species live, their moult strategies, how site faithful they are, the stage they have reached in the breeding process, and what physical condition they are in. For example, the amount of fat and muscle on a bird, and the stage of development of brood patches in females (and some male birds) can be visually assessed and categorised using basic standardised scoring systems.

1.7 Ringing activities are regulated by the British Trust for Ornithology (BTO), and all ringers have several years of training and need to hold licenses prior to working unsupervised. All data collected are collated centrally, following entry into a database (Integrated Population Monitoring Recorder [IPMR]). In 2015, in excess of 987,000 birds were ringed in the UK.

1.8 The cumulative data collected by ringers allows insight into the ecology and population dynamics of the bird species concerned, and forms an excellent basis for research. This is of particular importance in the context of climatic change, with many birds having to adapt to changing seasonal temperatures and peak times of food availability if population levels are to be maintained. Understanding where birds breed, winter and stage (stop during migration) also enables more effective international conservation, principally through the designation and management of important habitats vital to sustaining populations.

Aims of Ringing at Oxwich Marsh

1.9 As the capture and handling of birds inevitably results in a degree of physical stress, it follows that all ringing activity should be driven by scientifically robust aims. At Oxwich Marsh, the aims are as follows:

- To capture reed bed warblers in order to obtain data on site fidelity, timing of breeding, and to gain insight into the importance of the site to these species during the breeding season and passage periods;
- To capture large numbers of reed bunting, a species that previous ringing effort has established occurs at the site in good numbers, and which existing data suggests moves around numerous sites locally during the year (including other ringing sites);
- To capture good numbers of finches, particularly goldfinch, siskin, greenfinch and chaffinch. All typically undertake seasonal movements and greenfinch in particular has been subject to a recent national-level decline due to trichomonosis;
- To capture a range of migrant and wintering passerine species that are not likely to breed in the marsh, as the area is very challenging to survey due to its extent and inaccessibility, and also due to the fact that only a few birdwatchers regularly visit it. This will therefore provide baseline information with regard to the importance of the site for a variety of species; and,
- To raise the profile of ringing locally, leading to the growth of the ringing group, and to integrate our efforts with other local groups involved in bird conservation in South Wales.

1.10 In aiming to capture breeding, passage and wintering migrants, it is inevitable that a large number of resident and largely sedentary species are also trapped. While not a primary aim of ringing at the site, capturing these species allows detailed site-specific information on e.g. survival rates and timing of breeding and moult to be built up.

1.11 It should also be noted that Oxwich is an excellent site for training ringers. This is due to the number and diversity of birds captured. As a result, it complements some of the other projects the Gower RG is involved in (such as the Retrapping Adults for Survival (RAS) study on pied flycatcher at Cwm Clydach, and the Constant Effort Site at WWT Llanelli which result in extremely valuable data, but comparatively few birds being captured.

Raising Awareness

1.12 We produce regular on line summaries of our activities on the Gower RG blog (http://gowerbirdringinggroup.blogspot.co.uk/). These are now typically accessed by 500-1,000 people. in 2016 we also wrote articles summarising ringing activity for the Gower Ornithological Society's annual publication 'Gower Birds' and for the Gower Society's 'Gower Journal.' In addition, we also hosted the Welsh Ringing Course for the second (successive) year, between 9 and 12 September 2016.

2 Methods

Further Development of the Site

2.1 The reed bed rides, and those through marginal habitats, remained very wet in 2016 (as they had done in 2015). We therefore retired two of the wettest rides (totalling 360 feet in length), as the mud was very deep and the conditions underfoot were difficult.

2.2 The 'bund' net ride, established in September 2016 and approximately 500 feet in length, was used throughout the season (it follows a raised bank through the reed bed and is only seasonally muddy), and was supplemented by nets near the South Pond (principally for snipe), around two bird feeders (not used in peak passage periods) and in tall rush-dominated habitats (including a triangle of nets for catching pipits).

2.3 In the autumn, ahead of the Welsh Ringing Course, new rides were cut through the reed bed (560 feet) and near to the South Pond (over 1,000 feet of net ride). In theory we can now deploy almost 3,000 feet (in excess of 900 m) of net at the site. In practice we typically limited ourselves to approximately 600-700 feet, choosing which nets to put up based on wind direction and strength and the size of the ringing team. During parts of the year the presence of Highland cattle, used for conservation grazing, also put limitations on where it is possible to put nets.

2.4 The feeding station initially established in March 2013, and comprising two feeders stocked with sunflower hearts, was maintained throughout 2016. .

Data collected

2.5 For each bird captured, the following information was recorded:

- species;
- initials of the individual that processed the bird;
- time and date of capture;
- age;
- sex (where apparent) and sexing method;
- moult stage (including a moult code / primary moult score / count of retained old greater coverts where relevant);
- presence and stage of development of brood patch (using a standardised scoring system);
- presence of cloacal protrusion (male birds in the spring and summer);
- fat (presence and extent of deposit);
- wing length; and
- weight.

2.6 For some species additional data were collected. Basic wing formulas were taken for chiffchaff and willow warbler to confirm species (willow warbler is a long distance migrant and as such has a longer wing which is different in shape and has different feather tipping [emargination] to that of the similar chiffchaff), measurements of hind claw length and bill depth were taken to help determine pipit species, and tail fork length (the distance between the shortest and longest tail feathers) and total tail length was measured in adult swallows, as this can be used to determine sex in the species.

2.7 Despite the amount of information recorded, birds were handled for less than 1 minute in most cases. If there was any concern about their condition, or they were diseased, they were released without ringing.

2.8 Four standard reference texts were regularly used to inform the work for much of the year:

- Svensson, L. (1992). Identification guide to European passerines (5th Ed). Privately published, Stockholm.
- Baker, K. (1993). Identification guide to European non-passerines. British Trust for Ornithology, Thetford. A second, and substantially updated edition of the guide, was issued in late 2016.
- Demongin, L. (2016). Identification guide to birds in the hand. Beauregard-Vendon.
- Redfern, C.F & Clark, J.A. (2001). The ringer's manual. British Trust for Ornithology, Thetford.

2.9 The former three texts are concerned with techniques for species identification, sexing and ageing of birds. Accurate ageing is often dependent on an understanding of moult strategies in individual species and the typical characteristics of juvenile and adult feathers. The latter text provides considerable information with regard to standardised techniques for scoring / coding of moult state, fat, the development of the brood patch, how to take non-standard measurements etc. Further information on any aspect of this is available through the BTO.

3 Results

Overview

3.1 In 2016 **3,281** birds of **52** species were ringed at Oxwich. Recaptures from previous years and controlled birds (those initially ringed at other sites) took the total of unique birds processed at the site to **3,681**. Swallow (595) and goldfinch (479) were the most frequently captured species.

3.2 In 2015 and 2014 **3,925** unique birds of **47** species, and **3,564 unique** birds of **48** species were processed at Oxwich respectively. 2013 was a pilot year and both numbers and the diversity of the catch were lower. The breakdown of annual totals is shown in Table 1 below (and over page).

Table 1. Total numbers of birds trapped (2013-2016) at Oxwich Marsh

No.	Species	2013	2014	2015	2016
1	Sparrowhawk		3		2
2	Water rail				3
3	Jack snipe		1	2	14
4	Snipe		11	4	19
5	Woodpigeon		1		
6	Kingfisher	1	7	3	1
7	Green woodpecker			2	
8	Great Spotted woodpecker	3	14	23	21
9	Skylark		2	2	
10	Sand martin		14	8	33
11	Swallow	23	382	399	595
12	House martin		1		5
13	Tree pipit		13	3	37
14	Meadow pipit	8	48	65	14
15	Grey wagtail				1
16	Pied/White wagtail			7	44
17	Wren	41	74	96	76
18	Dunnock	17	61	50	39
19	Robin	24	101	68	49
20	Redstart			1	1
21	Whinchat			2	
22	Stonechat		6	10	21
23	Wheatear				1
24	Blackbird	14	32	39	29
25	Song thrush	5	7	18	10
26	Redwing		8	99	42
27	Mistle thrush			1	
28	Cetti's warbler	10	28	24	26
29	Grasshopper warbler	2	6	11	19
30	Sedge warbler	62	120	145	177
31	Reed warbler	113	153	159	227
32	Lesser whitethroat		2	2	1
33	Whitethroat	17	42	34	36
34	Garden warbler		21	5	16
35	Blackcap	51	300	190	71
36	Yellow-browed warbler		1		16
37	Wood warbler		1		
38	Chiffchaff	43	140	100	145
39	Willow warbler	22	94	85	146
40	Goldcrest	20	73	167	106

No.	Species	2013	2014	2015	2016
41	Firecrest	1	3	3	4
42	Long-tailed tit	17	30	37	42
43	Marsh tit		2		
44	Willow tit				1
45	Coal tit		3	7	8
46	Blue tit	224	393	469	235
47	Great tit	36	127	153	135
48	Nuthatch			2	1
49	Treecreeper	2	1	7	7
50	Magpie	1	1	1	1
51	Starling		2		
52	Chaffinch	30	196	265	208
53	Brambling		1		1
54	Greenfinch	3	355	468	244
55	Goldfinch	3	445	464	479
56	Siskin		62	58	150
57	Lesser redpoll			7	2
58	Bullfinch	17	19	13	2
59	Little bunting				1
60	Reed bunting	40	157	147	117
	Total	**850**	**3564**	**3925**	**3681**

3.3 Statistical comparison between years is not possible, as the total amount of net, the net rides used, and the number of visits each month varied depending on the personnel available and the weather conditions. Feeders were kept out and topped up in 2016, but were removed during parts of previous years due to the prevalence of disease in local finch populations. 2013 was a pilot year, and only small numbers of birds were captured.

3.4 Notwithstanding this, however, we aim to ring in the marsh twice a week during passage periods and at least once a week at other times. Where there are very obvious differences between years, these tend to be apparent. Clear differences between 2016 and previous years include:

- Higher captures of both jack snipe and common snipe, reflecting both ideal water levels for ringing in marginal vegetation close to the South Pond during the late spring and autumn periods and greater efforts to catch them.
- Lower catches of blackcap throughout the season. During peak autumn passage in September 2016 a total of twenty-seven birds were captured (fifty-five in September 2015; one hundred and ten in 2014) which emphasises an emerging downward trend. The decrease from the annual total of three hundred blackcaps captured in 2014 to seventy-one in 2016 is marked.
- Far better totals for some autumn passage migrants including swallow, tree pipit, pied/white wagtails, grasshopper warbler, sedge warbler, reed warbler and willow warbler than were achieved in 2015. These reflect both targeted effort (swallows, tree pipits and wagtails), and the good catches obtained from the bund nets (the warblers – all of which were proven to breed).
- A more muted late autumn / early winter period for common migrants than in 2015. Redwing passage over the marsh was less noticeable, and there were few large catches of goldcrests. This was offset by excellent catches of yellow-browed warbler (reflecting the record national influx reported by the BTO), our best year for firecrest (albeit only four birds were ringed) and the capture of our first genuine Welsh rarity, a little bunting.
- A generally poor or moderate year for many of our resident species. These included far lower totals of blue tit (poor productivity was reported nationally) and greenfinch (possibly due to trichomoniasis) than in 2015 or 2014, and more modest falls in the number of reed bunting, dunnock and robin captured.

3.5 Other notable results obtained during the season were the capture of a juvenile willow tit initially heard calling and subsequently trapped in the pipit triangle, three water rails (all in areas of tall,

inundated rush), and a grey wagtail, all of which were new species for the site and which take us to 60 species captured at the marsh. Willow tit is now something of a Gower rarity.

Species Accounts

Sparrowhawk

3.6 Two birds were captured (in March and April respectively).

3.7 One of these records involved the recapture of a male bird originally ringed as a recently-fledged juvenile in late August 2014 (BTO age code 7 when retrapped). Its weight was very similar to when first captured (141.3 g as opposed to 140 g).

Water rail

3.8 Water rails were captured in March, October and December 2016 close to the South Pond and in nets on the edge of the reed bed.

3.9 In addition to standard biometrics, tarsus and bill measurements were taken, as these can be used (along with wing length) to sex birds. One of the birds was considered to be a female, with the others indeterminate.

Jack snipe

3.10 Fourteen jack snipe were captured in 2016 (two in 2015).

3.11 Birds were trapped in March and between October and December 2016 inclusive. Most were caught around the margins of the South Pond.

3.12 Weight was very variable (range 47.8 g to 70.3 g), but none of the birds were noted as carrying visible fat deposits. Wing lengths were between 105 and 118 mm.

3.13 One of the best results of the ringing year was the recapture of a jack snipe initially ringed on 12 March 2016 in a different part of the marsh on 29 October 2016. This demonstrated between-winter site fidelity, as the bird will have assumedly returned to its breeding grounds in Northern Scandinavia or Russia between being ringed and its recapture.

Snipe

3.14 Nineteen snipe were captured at Oxwich in 2016 (four in 2015, eleven in 2014).

3.15 Most were captured close to the South Pond in winter, albeit we captured one bird in the bund nets on 14 August and two birds at the South Pond during the Welsh Ringing Course in September.

3.16 Wing lengths were between 126 and 144 mm, and weights ranged between 92 and 153 g, so there was no overlap with jack snipe in either measurement.

Kingfisher

3.17 A poor year for kingfisher, with a single bird captured in September, then recaptured in December 2016, by which time its weight had increased from 40.6 to 42.8 g. Reports of a ringed bird by photographers suggests that it was resident for the intervening period.

3.18 There was no evidence of local breeding.

3.19 In 2015 three birds were captured, and in 2014 (when breeding may have occurred on the North Pond) seven birds were trapped.

Great spotted woodpecker

3.20 Twenty-one individual great spotted woodpeckers were captured (twenty-three in 2015, eleven in 2014), six of which had been ringed in previous years. The remainder were newly ringed birds; eight of which were captured in June and three in December.

3.21 The first juvenile was captured on 4 June (demonstrating local breeding). Given the relatively intensive trapping at the marsh, it was of note to still be catching un-ringed woodpeckers in December (two were also captured in December 2015), and this may suggest birds are foraging more widely or dispersing at this time.

3.22 It is interesting to note that two bird feeders relatively remote from woodland (c. 300 m to the closest mature woods across an open marsh) can have over twenty woodpeckers visiting them.

Sand martin

3.23 Small numbers of sand martin were trapped among swallows during evening visits to the marsh in August and September. Of thirty-three birds captured (eight in 2015, fourteen in 2014), twenty-eight were recent fledglings.

Swallow

3.24 Of five hundred and ninety-five swallows captured in 2015 (three hundred and ninety-nine in 2015, three hundred and eighty-two in 2014), ninety-four were adults with the remainder juveniles. Most were trapped at dedicated evening roost sessions in the late summer and early autumn. The increased numbers reflect increased effort.

3.25 There were a couple of between session recaptures, indicating that some birds stayed in the area for three to four weeks, but no between-year recaptures.

House martin

3.26 Five house martins were captured in 2016. Although we did try tape-luring them when large numbers were apparent, this was largely unsuccessful and only accounted for a couple of the birds. The others were caught incidentally, one being captured during a swallow roosting session (albeit it was an early bird that was probably foraging alongside swallows as opposed to roosting with them).

Tree pipit

3.27 Tree pipits were captured between 14 August and 29 August inclusive; it was the best year to date for the species with thirty-seven captured. Catching was curtailed by poor weather in early September. In the next best tree pipit year to date (2014 when thirteen were captured) birds were trapped between 23 August and 9 September inclusive.

3.28 Audio was used to lure birds towards nets on days that they were initially heard calling in flight overhead.

3.29 Biometrics taken included bill depth and hind claw length, as these, together with a range of other supporting features, can be used to definitively separate birds from the relatively similar meadow pipit. In the hand the shorter hind claw and the sturdier bill of tree pipit are often immediately apparent, along with plumage features.

3.30 Weights varied between 18.2 and 23.9 g (18.3 and 25.1 g over the previous two years) and wing length between 82 and 91 mm. None of the birds was carrying a large amount of fat, albeit one was given a fat score of four based on the British Working Group scoring system.

Meadow pipit

3.31 There was little effort expended catching meadow pipits in 2016, and as a result the annual total captured dropped from sixty-eight (in 2015) to fourteen. There were few obvious days when pipits

were migrating in number, and we concentrated on other species with higher likely recapture / control rates.

3.32 The only notable result was the capture of a very recently fledged juvenile bird in July 2016, proving breeding among rushy habitats on the edge of the reed bed. Thirteen additional birds were captured using a triangle of nets and audio playback of calls between 10 September and 8 October.

Grey wagtail

3.33 A first winter grey wagtail was captured in scrub on 15 October 2016.

3.34 It is assumed that the bird had either roosted close by or was flying into the net ride to forage, as it was not in typical open, muddy / wetland habitat.

Pied / white wagtail

3.35 Pied / white wagtails were captured between 30 August and 20 September inclusive.

3.36 The total of forty-four unique birds far exceeded that of 2015 (seven), when we first became aware of a wagtail roost in the marsh. Birds were captured during swallow roost sessions using extra nets and playback of calls.

3.37 The wagtails were determined to race, where possible, using reference documents by Livingstone (undated) and Evans & Cade (2011), both of which can be downloaded from the Internet. However, there are limitations to what can be concluded (especially by those who don't handle wagtails and see their variability with regularity), and only the adult males proved relatively straightforward.

3.38 It was clear that many of the wagtails were actively migrating, and six were noted as carrying fat scores of four (based on the British Working Group scoring system).

Wren

3.39 Wren holds territory in various locations around the marsh, and seventy-six unique birds were captured in 2016 (ninety-six in 2015, seventy-four in 2014). There were seventeen recaptures from previous years.

3.40 The first fledgling was captured on 3 July (27 June in 2015, 21 June in 2014).

Dunnock

3.41 A total of thirty-nine unique dunnocks were processed on the marsh in 2016, comprising twenty-four newly-ringed birds and fifteen birds initially captured during previous years. This suggests a poor local breeding season for the species, as between year retraps were similar to 2015 (when seventeen birds were recaptured), but the overall total processed declined (from fifty in 2015 and sixty-one in 2014).

3.42 The first fledged juvenile was noted on 4 June (7 June in 2015, 24 May in 2014).

Robin

3.43 A total of forty-nine unique robins (sixty-eight in 2015, one hundred and one in 2014) were trapped on the marsh in 2016, of which forty-four were new and five were re-trapped birds ringed in previous years.

3.44 No notable influxes of robins occurred.

3.45 Robin holds territory at the marsh, and the first fledged juvenile was trapped on 14 May (23 May in 2015, 13 May in 2014). Considerable differences in weight were noted between birds, with the smallest weighing 14.6 g and the largest 23.8 g; despite this, however, only two birds were given a

fat score above three (using the British Working Group scoring system). Wing length varied between 64 mm and 77 mm.

Redstart

3.46 A redstart was captured on 27 August 2016 in a line of nets on the edge of the reed bed. The bird was a male in post juvenile moult.

3.47 In 2015 an unsexed bird (probably a female) was captured on 15 August.

Stonechat

3.48 Twenty-one stonechats were ringed on the marsh in 2016 (ten in 2015, six in 2014). Family parties began moving through in early June (but there was no evidence of breeding on site).

3.49 Three adults and nineteen juveniles were trapped. Most were caught on the bund, with a few also trapped in the pipit triangle.

3.50 The birds weighed between 13.7 and 18.2 g (14.3 and 17.1 g in 2015) and had wing lengths of 64 – 70 mm.

Wheatear

3.51 An adult male wheatear was captured during the Welsh Ringing Course on 10 September. The first captured since Gower RG commenced ringing at the site in February 2013.

Blackbird

3.52 A total of twenty-nine unique blackbirds were processed at Oxwich Marsh in 2016 (thirty-nine in 2015, thirty-two in 2014), of which twenty-three were newly-ringed birds and six were recaptured birds from previous years. The species holds territory around the edges of the marsh, and the first fledgling was captured on 14 May (30 May in 2015, 3 May in 2014).

3.53 Birds had a wing length of 117 - 135 mm (the longest-winged bird was caught in July and was therefore likely to be part of the local breeding population) and weights of 76.7 - 113.1 g, the latter being the long-winged bird trapped in July (in 2013 a blackbird with a weight of 128.5 g was trapped). None of the birds were carrying significant fat.

Song thrush

3.54 Eleven unique song thrushes were captured in 2015 (eighteen in 2015, seven in 2014).

3.55 There was no evidence of successful local breeding (i.e. young birds or birds with brood patches), but territories were present around the marsh. There were four recaptures from previous years.

Redwing

3.56 Forty-two redwings were captured between 20 October and 17 December 2016 (albeit only two of these were captured in December). Twenty-one were considered to be first winter birds, and twenty-one adults (based principally on the pattern of the tertial tips and tail feather characteristics).

3.57 In 2015, when there was heavy passage over a short time period, we captured ninety-nine birds. This total included fifty-eight redwing captured on 28 October 2015.

3.58 The weight of birds varied between 54.5 and 72.4 g, but none were carrying significant fat (the highest fat score recorded was 3 [based on the British Working Group scoring system]).

Cetti's warbler

3.59 Cetti's warbler is one of the most obvious species at Oxwich Marsh due to its explosive song.

3.60 A total of 26 unique birds were captured (24 in 2015, 28 in 2014). The first young bird was captured on 25 June (27 June in 2016). Adults and juveniles become increasingly difficult to reliably separate in the autumn due to a lack of clear plumage differences following post juvenile / post breeding moult.

3.61 It was interesting to note that eleven Cetti's warblers were captured in October and a further five in November. A couple of these birds were carrying reasonable levels of fat (scores of 3 and 4 were noted). While this would be unremarkable in most species, Cetti's warbler does not typically carry visible fat, and this indicates likely migration / dispersal of birds in the late autumn period.

Grasshopper warbler

3.62 It was the best year to date for grasshopper warbler. A total of nineteen birds were captured of which five were adults and fourteen were juveniles.

3.63 The first bird was captured on 17 April, and the last on 10 September (when we had a day total of six birds).

3.64 As in 2015 there was very strong evidence that grasshopper warbler bred on the marsh. Reeling occurred throughout the spring from two areas on the edge of the reed bed. A bird initially captured on 23 April was recaptured on 14 May, by which time it had a cloacal protrusion (allowing it to be sexed as a male), and was still present on 11 June. Recently fledged juveniles (2) were captured on 30 June, with another very young bird trapped on 7 July.

3.65 Birds carrying considerable fat stores were noted from the end of July onward, indicating they were preparing to migrate or already moving.

Sedge warbler

3.66 Small numbers of sedge warbler hold territory on the marsh. The first returning migrant was heard on 13 April (15 April in 2015, 17 April in 2014), young birds were trapped from the early date of 18 June (23 July in 2015, 20 July in 2014) and the final record of the species was of a bird on 2 October (1 October in 2015). During autumn migration some birds were carrying considerable fat: the heaviest weighed 16.9 g (18.2 g was the maxima in 2015) with fat covering two-thirds of the breast muscle (score of seven).

3.67 A total of one hundred and seventy-seven unique sedge warblers were captured at Oxwich in 2016 (one hundred and forty-five in 2015), which included five recaptures from previous years. The largest day-catches were of thirty-six and thirty-three birds on 30 July and 10 September respectively (the largest catch at the site to date was forty-one on 7 August 2014).

3.68 A sedge warbler ringed at the marsh on 14 August 2016 was controlled at Poole Harbour, Dorset on 28 August, a movement of 175 km east south-east. The only other control sedge warbler was a bird ringed at Leason on the Burry Inlet (by Barry Stewart), and captured on the marsh four days later (on 20 August).

Reed warbler

3.69 A total of two hundred and twenty-seven unique reed warblers were trapped on the marsh in 2016 (one hundred and fifty-nine in 2015, one hundred and fifty-three in 2014). The first birds were heard singing on 17 April (18 April in 2015, 17 April in 2014), and the first fledgling was trapped on 30 June (11 July in 2015, 21 June in 2014).

3.70 There was a run of very late birds; on 15 October (a young bird), 22 October (adult), 29 October and 19 November (the same young bird). The last of these appears to constitute the latest record of the species in Vice County 41 (Glamorgan), and possibly the latest record for Wales.

3.71 It was an excellent July, with one hundred and thirty-three reed warblers captured. However, only three birds from previous years were recaptured during the season, which was a little disappointing.

3.72 Size and weight varied. Wing lengths were between 59 - 70 mm, with those at the bottom end of the range (typically recently fledged birds) checked against the identification criteria for Blyth's reed warbler and those towards the top end against those for marsh warbler. Weight varied between 9.3 g and 15.8 g, which was a very similar range to 2015.

3.73 A reed warbler originally ringed at Teifi Marshes, Ceredigion, in 2011, was captured in April and July 2016. The bird is a female that breeds at Oxwich. It was previously captured in both 2014 and 2015.

3.74 The only other control reed warbler was a bird ringed at Leason on the Burry Inlet a week or so before (by Barry Stewart), and captured on the marsh on 6 August.

3.75 A juvenile reed warbler ringed at Oxwich on 22 July 2008 was recaptured on 11 June 2016. The bird was therefore likely to have been approaching eight years of age at the time it was re-trapped.

Lesser whitethroat

3.76 A poor year for the species, with just one bird captured (a juvenile) on 23 July 2016. Two birds were captured in both 2015 and 2014.

Whitethroat

3.77 Thirty-six unique whitethroats were captured in 2016 (thirty-four in 2015, forty-two in 2014). The first bird was caught on 30 April (25 April in 2015) and the last on 11 September (3 October in 2015, 20 September in 2014).

3.78 Birds bred in scrub around the fringes of the reed bed, and the first fledgling was captured on 18 June (27 June in 2015). There was one between-year retrap; a male ringed in July 2015 was recaptured almost exactly a year later.

Garden warbler

3.79 Garden warbler is an uncommon passage migrant and a scarce breeder in Gower. In some years there are no autumn records of the species listed in the Gower Bird Report.

3.80 Sixteen birds therefore represents a good return, but is still five fewer than the best year to date at the site (2014). Garden warblers were captured between 30 July and 08 October (albeit the last bird was an outlier and all the others had been captured by 17 September). One bird was an adult and the remainder juveniles.

Blackcap

3.81 A total of seventy-one unique blackcaps were processed in 2016, a considerable decrease on the one hundred and ninety and the three hundred birds captured in 2015 and 2014 respectively. The species breeds in scrub and woodland around the marsh, but is also caught in the reed bed as birds feed up / disperse / stage after the breeding season.

3.82 The first blackcap was trapped on 17 April 2016 (13 April in 2015, 12 April in 2014) and the last on 26 November (3) (20 October in 2015, 13 December in 2014), with fledglings noted from 30 June (20 June in 2015, 7 July in 2014). The highest day count was a fairly paltry ten on 17 September.

3.83 The weight of birds varied between 14.0 g and 21.3 g (13.9 g - 24.3 g in 2014), with the heaviest birds trapped during autumn migration and carrying reasonable fat deposits.

3.84 There were five between year recaptures of blackcap; two from 2014 and three from 2015.

3.85 A blackcap ringed at Oxwich as a second calendar year male in June 2015 was controlled at Fawley, Hampshire in April 2016. It was assumedly on return passage or had already arrived on territory at the time. The recapture site is 213 km east south-east of Oxwich.

Yellow-browed warbler

3.86 An unprecedented sixteen yellow-browed warblers were captured between 8 October and 29 October inclusive. This included a vice county record total of nine birds on 8 October.

3.87 Some birds were carrying significant fat (up to a score of six), and weights varied widely (between 5.1 g and 8.6 g). We had only previously caught one yellow-browed warbler at the marsh, in late October 2014.

Chiffchaff

3.88 Chiffchaff breeds at Oxwich, occurs in largest numbers in the marsh during autumn passage, and in small numbers in winter.

3.89 A total of one hundred and forty-five unique chiffchaffs were trapped in 2016 (one hundred in 2015, one hundred and forty in 2014). The first records were of two wintering birds, captured on 16 January. What were assumedly returning migrants were captured from 19 March onward.

3.90 There was one between-year re-trap of chiffchaff, a returning male that had held territory on the marsh in 2015.

3.91 The first fledged juvenile was caught on 25 June (20 June in 2015, 21 June in 2014), and the highest numbers trapped during a ringing session were 17 on 10 September and 15 on 8 October.

3.92 A bird ringed in the Nanjizal Valley, Land's End, Cornwall on 13 October 2015 was recaptured on the marsh on 16 January 2016. An interesting north north-easterly movement (given the respective dates) of 200 km.

Willow warbler

3.93 One hundred and forty-six unique willow warblers were trapped on the marsh in 2016 (85 in 2015, 94 in 2014). There were no captures of birds initially ringed in previous years.

3.94 Willow warblers breed around the marsh. The first bird was trapped on 8 April (6 April in 2015) and the last on 2 October (23 September in 2015). The first fledglings were caught on 1 July (15 July in 2015, 12 July in 2014).

3.95 Notable captures were on 14 August (42 birds), 30 July (24 birds) and 27 August (20 birds), with the last day to have a multiple capture being 10 September.

3.96 A willow warbler ringed at Lagganbeg, Kilniver, Oban, Argyll & Bute on 26 July was recaptured on the marsh on 14 August 2016; a southerly movement of 535 km.

Goldcrest

3.97 Goldcrest is likely to breed in woodland close to the marsh, and in 2014 a recent fledgling was captured. However, it mainly occurs as a late autumn migrant, is uncommonly captured during much of the year, and no recent fledglings were captured in 2016.

3.98 One hundred and six unique goldcrests were trapped at Oxwich in 2016 (one hundred and sixty-seven in 2015). Of these, seventy-three were captured in October. Two birds ringed in 2015 were recaptured in early 2016.

3.99 A goldcrest ringed at Billinge Hill, Merseyside on 9 October 2015 was recaptured at Oxwich on 20 October 2016, a movement of 237 km in a south south-westerly direction.

Firecrest

3.100 Firecrest is a scarce but regular late autumn passage and winter visitor in Gower. We have now trapped eleven birds on the marsh since ringing began in February 2013. All have been over an approximate six week period between 8 October and 16 November inclusive.

3.101 In 2016 three male and one female firecrest were captured, with two birds on 8 October and two on 5 November. Three firecrests were trapped in both 2015 and 2014, and one in 2013.

3.102 One of the November birds was carrying fat (score of four using British Working Group system) suggesting it was actively moving / had just arrived.

Long-tailed tit

3.103 Forty-two unique long-tailed tits were processed at Oxwich in 2016 (thirty-seven in 2014). There were no recaptures from previous years.

3.104 No birds were captured between 8 April and 8 October, and there was no evidence of local breeding. Apart from two birds captured in the late winter / early spring, all of the long-tailed tits were captured as they moved through the marsh in roving flocks in October and November.

Willow tit

3.105 A willow tit was captured on 18 August. This is a scarce species in Gower (now reported on a less than annual basis).

3.106 The bird was determined as a juvenile; the wing and tail feathers were very fresh, there was no evidence of a re-feathering brood patch, and extensive moult of body feathers was apparent. An adult would have been in main moult (of wings and tail feathers) at this time.

3.107 The bird showed a relatively understated wing panel typical of young willow tits (adults have paler fringed inner secondaries and terials which makes the feature more obvious). Other interesting notes on age from Demongin (2016) concern iris colour, which gradually changes from dark brown in juveniles to light / rufous brown in adults, and pale edges to the tail feathers in juveniles. Our bird showed both of these features.

3.108 While the identification was not in particular doubt, as the bird had been first noted making characteristic churring calls, then responded to a willow tit tape lure, we did go through the formal process of separating it from marsh tit.

3.109 The wing of the British subspecies of willow tit, *kleinschmidti*, typically measures 55-63 mm (marsh tit 59-71) (Svensson, 1992; Demongin, 2016). Ours, with a wing length of 59 mm was near the middle of the willow tit range but right at the bottom of that of marsh tit. Another feature that is considered useful in separating freshly-plumaged willow tit and marsh tit is that the 6th tail feather falls more than 4 mm short of the tip of the tail in willow tit (marsh tit tail feathers are usually less than 5 mm short of the tip). Our bird had a difference of 5 mm. Although marsh tit cannot be ruled out on these features, they are the shortest wing length and the longest tail difference recorded in marsh tit respectively, but typical of willow tit.

3.110 Demongin lists further features that are typical of willow tit. Some of these are rather subjective: the bill is more elongated than that of marsh tit; willow tit tends to lack a pale cutting edge (and if present this in on the lower mandible; the lack of a well-defined black bib, and whitish cheeks and sides of the neck are typical of willow tit (the latter are often grey-brown in marsh tit). The bird showed all of these willow tit features.

3.111 A notable record for Gower, and one that raises the intriguing prospect that the species may breed locally.

Coal tit

3.112 Eight unique coal tits were trapped in 2016 (seven in 2015). These included two birds originally ringed in 2015 and recaptured in the first winter period of 2016.

3.113 Coal tits were captured in January, February, October and November. There was no indication of local breeding.

Blue tit

3.114 Two hundred and thirty-five blue tits were processed at Oxwich in 2014 (four hundred and sixty-nine in 2015, three hundred and ninety-four in 2014). There was a 59% decrease in the number of new blue tits ringed between 2016 and 2015, which reflects emerging conclusions that it was a poor year for the species nationally. Forty-six birds ringed in previous years were recaptured.

3.115 The first juveniles were caught on 18 June (7 June in 2015, 14 June in 2014). The largest day catch was of thirty-three blue tits on 16 January. Post breeding, the largest day catch was of seventeen birds on 10 September. In previous years big days have included sixty-three birds on 22 November 2015 and regular catches of over fifty individuals.

3.116 There was slightly belated news of a blue tit recaptured on the marsh on 13 December 2015. It had been ringed at the site by Barry Stewart, the previous ringing incumbent, approximately six years and three months before.

Great tit

3.117 A total of one hundred and thirty-five unique great tits were trapped on the marsh in 2016 (one hundred and fifty-three in 2015). The species breeds locally, and the first juveniles were trapped on 11 June (7 June in 2015, 1 June in 2014). The largest day catch was of twenty-four great tits on 3 July.

Nuthatch

3.118 A male bird of indeterminate age was captured on 10 September 2016 (two birds were captured in 2015).

Treecreeper

3.119 Seven treecreepers were captured in 2016, which is the same total as 2015. These included four recently fledged juveniles in mid-July, indicating successful local breeding.

Magpie

3.120 A magpie was captured on 8 April 2016. The bird was found to have been originally ringed in May 2014, when it was in its second calendar year.

3.121 It had put on 65 g between the two dates, and its well-developed brood patch indicated it was a female likely to be breeding locally.

Chaffinch

3.122 Chaffinches were commonly trapped throughout the year, and were regular visitors to the feeding station. A total of two hundred and eight unique birds were processed (two hundred and sixty five in 2015, one hundred and ninety-six in 2014). These included twenty-nine birds ringed in previous years. The first juveniles were recorded on 4 June (30 May in 2015, 1 June in 2014), and the species appears to breed commonly in the vicinity of the reed bed.

3.123 The largest day total was of twenty chaffinches on 25 June. There was no evidence of a fall during passage periods, or of birds feeding up and storing fat prior to migration obtained in 2016.

Brambling

3.124 A female brambling was captured on 8 April 2016. The bird had apparently been coming in to the feeders.

Greenfinch

3.125 A total of two hundred and forty-four unique greenfinches were processed at Oxwich in 2016 (four hundred and sixty-eight in 2015, three hundred and fifty-five in 2014).

3.126 The species breeds locally, and the first juveniles of the year were trapped on 14 May (30 May in 2015, 1 June in 2014). Twenty birds ringed in previous years were re-trapped in 2016.

3.127 The wing lengths and weights of the birds varied between 79 and 92 mm and 18.5 and 31.2 g respectively. There was a roughly equal break down between male and female birds.

3.128 The largest day catch was of ninety-four birds on 11 September 2016.

3.129 The decrease in new birds ringed of 50 % (from 2015) is cause for concern. It may well be attributable to disease. However, it should be noted that since we have moved the feeders to a drier, more enclosed ride, this seems to have coincided with a fall in the number of greenfinches using them. The very high catch (of ninety-four birds) occurred when we moved the feeders back to a more open location where they were formerly sited (for the Ringing Course).

3.130 There was one record of a long-distance movement returned. A bird ringed on the marsh in October 2015 was found dead at Fishburn, County Durham on 12 September 2016. A movement of 391 km in a north north-easterly direction. The only other recoveries were local to the site.

3.131 A greenfinch ringed by the Gower RG in Crynant (Neath Port Talbot) in September 2007 was recaptured at the marsh in January 2016. The eight years and four months between ringing and recapture is likely to make this one of the oldest greenfinches processed in the UK in 2016.

Goldfinch

3.132 A total of four hundred and seventy-nine unique goldfinches were processed at Oxwich in 2016 (four hundred and sixty-four in 2015, four hundred and forty-five in 2014). There were seventy-one birds recaptured that had been ringed in previous years.

3.133 The species breeds locally, and the first juveniles of the year were trapped on 4 June (30 May in 2015, 14 June in 2014).

3.134 Wing length varied between 71 and 83 mm and weight between 11.1 and 19.6 g. Only a few birds were captured that were carrying more than a fat score of 3. These were generally in the first few months of the year, and it appears that movements occur throughout the winter period based on this.

3.135 The largest day catch of goldfinches was of fifty-two birds on 17 July.

3.136 A female bird ringed on the marsh on 25 March 2016, was recaptured at Gleninagh Quay, Ballyvaughan, County Clare, Ireland on 5 April. Between the two dates it had made its way 386 km in a west north-westerly direction. Our best finch movement to date.

3.137 A young bird ringed at Oxwich in October 2014 was controlled at Williton, Somerset, on 26 February 2016. A movement of 79 km to the south-east.

3.138 A second young bird ringed by the Kenfig RG at Ty'n-y-Caeau (Vale of Glamorgan) on 20 September 2013 was recaptured on 23 January 2016. A west north-westerly movement of 47 km.

Siskin

3.139 This was the best year to date for siskin, with one hundred and fifty unique birds processed.

3.140 Siskins were captured between January and August 2016 inclusive, but were most abundant from February to May. In previous years they had been present on the marsh for shorter periods: they were mainly trapped between early April and mid-August in 2015; in 2014 they began visiting the feeders in early March and had left by July.

3.141 While it was clear that siskin bred on the marsh, with the first juvenile captured on 3 May 2016 (23 May 2015), there was no evidence of a second brood in 2016 (there was a second cohort of fledglings from mid-July in 2015) and only eleven young were captured.

3.142 A second calendar year female bird ringed on the marsh in February 2016 was controlled at Millhousebridge, Dumfries & Galloway, on 30 April. A northerly movement of 402 km.

3.143 Another second calendar year female, ringed at Bourne Wood, Lincolnshire, on 3 April 2016 was controlled at Oxwich on 30 April 2016. A movement of 290 km west south-west. There was no indication that the bird was in breeding condition when captured.

3.144 A young male siskin ringed at Oxwich on 16 October 2015 was controlled at Broadwath, Carlisle, on 24 February 2016. A north north-easterly movement of 380 km.

Lesser redpoll

3.145 Birds were captured in January and July 2016.

3.146 In 2015 seven birds were captured. These included a female (trapped on 31 July) with a well-defined brood patch, indicating it was likely to have bred locally.

3.147 There was little evidence of local breeding in 2016.

Bullfinch

3.148 Two second calendar year females were captured in May 2016. There has been a marked reduction in the number of bullfinches trapped at Oxwich over the past few years, with 2013-2015 inclusive returning seventeen, nineteen and thirteen unique birds respectively.

3.149 There were no (obvious) territories close to the ringing rides, and local breeding was not proven.

Little bunting

3.150 A 1st winter bird was captured on 20 October 2016 in the bund nets.

3.151 It had a wing length of 72 mm, was carrying no fat and had a distinctively juvenile-looking tail (very pointed and abraded with the hint of a growth bar).

3.152 The identification was fairly straightforward. It was visibly slighter than a reed bunting, showed a clear white eye ring, and brown cheeks with a dark border. The malar stripe did not extend close to the bill, it showed subtle wing bars and narrow flank streaking.

3.153 It was released near the South Pond hide, to allow any visiting birders the chance to see it. On release it called - a robin-like tick - and flew some distance before appearing to drop into scrub.

3.154 A second little bunting was ringed on Bardsey Island, also on 20 October. Prior to these records, BTO data indicate that the species had not been ringed in Wales for over ten years.

Reed bunting

3.155 A total of one hundred and seventeen unique reed buntings were processed at Oxwich Marsh in 2016 (one hundred and forty-seven in 2015, one hundred and fifty-seven in 2014) of which eighty-four were new birds.

3.156 The species occurs on the marsh year-round, and the first juveniles were trapped on 18 June 2016 (20 June in 2015, 14 June in 2014).

3.157 A bird ringed in August 2010 (by Barry Stewart the previous ringing incumbent of the marsh) as a juvenile was recaptured in August 2016, almost exactly six years later.

4 Conclusions

4.1 The fourth year of Gower RG activity at Oxwich has been another good one.

4.2 Although the total number of birds ringed at the marsh decreased from 2015, the numbers of long distance migrants and other species of particular interest increased, and the overall fall can be attributed to declines in the numbers of blue tits, greenfinches and a few other common, mainly resident, species.

4.3 We are now building useful data sets that help us meet our objectives, particularly with regard to reed bed warblers, other long distance migrant passerines and local finch populations.

4.4 It was good to capture a few new species for the site in 2016: water rail (3), willow tit, wheatear, grey wagtail, and little bunting. The latter represents the first rarity captured at the site, albeit in a few years it may be a more likely capture than a willow tit, which is locally very scarce and appears to be declining. Other highlights have included a great year (by our standards) for jack snipe and yellow-browed warbler, a good autumn tally of firecrests, and proving local breeding in grasshopper warbler for the second successive year.

4.5 The profile of the group continues to rise as a result of the Welsh Ringing Course and through the use of our blog. 2017 should be another great year at Oxwich, and it is hoped that the Group will grow further.

5 Acknowledgements

5.1 We are extremely grateful to the Gower Society for providing a second year of grant funding in 2016. Without this grant it would not have been possible to continue ringing on the marsh with the same intensity as in previous years, and the data gathered would consequently be far less useful.

5.2 We are also very grateful to Penrice Community Council for a donation to our Group funds in summer 2016. Along with the Gower Society grant (above) we largely covered our costs during the year as a result.

5.3 Nick Edwards (of Natural Resources Wales), who manages the marsh, has been consistently supportive of our efforts since we began ringing in 2013. His assistance in the late autumn, putting in a gate at the end of the bund (to exclude the cattle from the ringing ride) was particularly appreciated.

5.4 Thanks are also due to members of the Gower Ringing Group who have attended regularly over the course of the year and provided the impetus and commitment to maintain our efforts. In particular: Heather Coats, Cedwyn Davies, Keith Vaughton, Wayne Morris, Emma Cole, Darren Hicks, Val Wilson, Paul Aubrey, Phil Mead, Ben Rees, Lynn Watts and Sammy-Jo Pengelly. Both Wayne and Emma received their C Permits in 2016 (Wayne's upgrade only involved the removal of the restriction on mist netting on his permit).

5.5 Finally thanks to Kelvin Jones for organising the 2016 Welsh Ringing Course, to Martin Hughes (the independent trainer) for his expertise and taking the time to travel down to join us, and to Gower Ringing Group members for their assistance in making everything tick.

Appendix 1: Photographs

Photo 1.

Second calendar year (male) Sparrowhawk (Keith Vaughton)

Photo 2.

Third calendar year male Sparrowhawk (Keith Vaughton)

Photo 3.

Water rail (Owain Gabb).

Photo 4.

Jack snipe (Keith Vaughton)

Photo 5.

Jack snipe (Keith Vaughton)

Photo 6.

Redstart (Keith Vaughton).

Photo 7.

Grasshopper warbler (Keith Vaughton)

Photo 8.

Willow tit (Owain Gabb)

Photo 9.

Yellow-browed warbler (Keith Vaughton).

Photo 10

Firecrests (Keith Vaughton)

Photo 11.

Little bunting (Keith Vaughton)

Photo 12.

Goldfinch (Keith Vaughton)