Oxwich Marsh

Ringing Report 2014

Report to Natural Resources Wales

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1 Introduction

Background

1.1 Oxwich Marsh is located on the south coast of the Gower Peninsula approximately 13km to the west of Swansea. The 'marsh' supports a range of habitats, including extensive reed bed, scattered scrub and wet woodland, ditches and 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 reedbed in considerable numbers during passage periods. Other migrant species such as whitethroat, blackcap and chiffchaff hold territory in fringing scrub and woodland.

1.3 Bird ringing has been undertaken at Oxwich Marsh for many years, most recently (up to 2010) by Barry Stewart, and more historically by Derek Thomas, who completed a detailed academic study on reed warbler at the site. In March 2013 the Gower Ringing Group began ringing at Oxwich Marsh, with the support of the land managers, Natural Resources Wales. 2013 was essentially a reconnaissance year.

1.4 In 2014 the ringing effort at the marsh was increased. This was made possible by a number of things: increased knowledge of the marsh allowing us to work it more effectively; the commitment of a number of experienced and dedicated ringers (which allowed the amount of net it was possible to put up to be considerably increased); and, the ongoing support of Natural Resources Wales with regard to the expansion of our activities. In addition to weekends, we undertook weekday visits during passage periods, evening visits to catch swallows, made our first attempts at catching snipe at the site, and more than doubled the number of net rides used.

Purpose of Bird Ringing

1.5 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. 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.

1.6 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. Ringing and recapturing individual birds therefore allows us detailed insight into bird movements.

1.7 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 a basic standardised scoring system.

1.8 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 independently. All data collected are collated centrally, following entry into a database (Integrated Population Monitoring Recorder [IPMR]). In 2013, slightly in excess of 950,000 birds were ringed in the UK.

1.9 The 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

1.10 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 site-specific data on site fidelity, timing of breeding, and to gain insight into whether the site appears to be of greater importance to these species during the breeding season or 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 for which some useful data have been returned from subsequent recapture at other sites (helping us to understand how these birds move around the country seasonally);
- To capture good numbers of finches, particularly goldfinch, greenfinch and chaffinch. These species began visiting feeders in the marsh with regularity in early 2014. All typically undertake seasonal movements;
- 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 staging in a variety of species;
- To make a substantial contribution to the total number of birds ringed in Wales during the calendar year; and,
- To raise the profile of ringing locally, ultimately leading to expansion of the group.

1.11 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.

2 Methods

Further Development of the Site

2.1 In February 2013 a series of net rides were cleared in the reedbed and adjacent scrub using a brushcutter: these rides were raked to remove the cut material. These allowed for a total of 440 feet of net to be erected.

2.2 The 2013 net rides were largely retained for 2014 (one forty-foot net ride in the scrub and a sixty-foot net ride in adjacent woodland were not re-cut). However, over the course of the year, we cut a new 330 foot net ride (l-shaped) in an area we called the 'fen meadow,' put up nets in a compound used for the storage of materials by Natural Resources Wales, and also tried a variety of net configurations in an area of seasonally inundated rushy pasture (up to 180 feet of net was typical in this area) in the autumn. We did not deploy a 'typical' / minimum amount of net per visit: this varied according to personnel available, wind direction and speed, and seasonal targets.

2.3 The feeding station established in March 2013 was maintained throughout 2014. It comprised two feeders stocked with sunflower hearts. These were filled and cleaned regularly throughout the season. For a short period in late summer they were removed due to the prevalence of trichomonosis in the local greenfinch population.

2.4 Session reports were regularly produced, and were published on the Gower Ringing Blog (http://gowerbirdringinggroup.blogspot.co.uk/), the readership of which is gradually growing.

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 longer 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 Three standard reference texts were regularly used to inform the work:

- 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.
- Redfern, C.F & Clark, J.A. (2001). The ringer's manual. British Trust for Ornithology, Thetford.

2.9 The former two 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 etc. Further information on any aspect of this is available through the BTO.

3 Results

Overview

3.1 In 2013 **831** birds of **29** species were ringed on the marsh. The most frequently trapped were blue tit (218 ringed), reed warbler (112 ringed), sedge warbler (61 ringed), wren (40 ringed) and reed bunting (36 ringed). The most notable results were the capture of a firecrest, a scarce passage migrant / winter visitor, and 112 new reed warblers (plus a few birds from 2010 and before).

3.2 In 2014 we ringed **3,371** new birds of **48** species. Totals are in the tables below:

Table 1. Total of birds trapped in 2014 at Oxwich Marsh

Species		New	Re-trapped	Total
1	Sparrowhawk	3	2	5
2	Jack Snipe	1	0	1
3	Snipe	11	0	11
4	Woodpigeon	1	0	1
5	Kingfisher	7	1	8
6	Great Spotted Woodpecker	11	26	37
7	Skylark	2	0	2
8	Sand Martin	14	0	14
9	Swallow	382	0	382
10	House Martin	1	0	1
11	Tree Pipit	13	0	13
12	Meadow Pipit	48	1	49
13	Wren	60	49	109
14	Dunnock	54	85	139
15	Robin	93	67	160
16	Stonechat	6	2	8
17	Blackbird	28	21	49
18	Song Thrush	6	1	7
19	Redwing	8	0	8
20	Cetti's Warbler	23	13	36
21	Grasshopper Warbler	6	0	6
22	Sedge Warbler	116	10	126
23	Reed Warbler	144	23	167
24	Lesser Whitethroat	2	0	2
25	Whitethroat	42	4	46
26	Garden Warbler	21	1	22
27	Blackcap	299	16	315
28	Yellow-browed Warbler	1	0	1
29	Wood Warbler	1	0	1
30	Chiffchaff	140	6	146
31	Willow Warbler	92	7	99
32	Goldcrest	72	3	75
33	Firecrest	3	0	3
34	Long-tailed Tit	24	14	38
35	Marsh Tit	2	5	7
36	Coal Tit	3	0	3
37	Blue Tit	312	312	624
38	Great Tit	107	155	262
39	Treecreeper	1	0	1
40	Magpie	1	0	1
41	Starling	2	0	2
42	Chaffinch	192	38	230
43	Brambling	1	0	1
44	Greenfinch	353	82	435
45	Goldfinch	443	173	616
46	Siskin	60	55	115
47	Bullfinch	15	11	26
48	Reed Bunting	144	73	217
Total:		**3371**	**1256**	**4627**

Table 2. The ten most frequently ringed bird species at Oxwich Marsh in 2014

Species		Total
1	Goldfinch	443
2	Swallow	382
3	Greenfinch	353
4	Blue Tit	312
5	Blackcap	299
6	Chaffinch	192
7	Reed Bunting	144
8	Reed Warbler	144
9	Chiffchaff	140
10	Sedge Warbler	116

Table 3. Totals of unique birds[1] captured in 2013 and 2014

Species		2013	2014
1	Sparrowhawk	0	3
2	Jack Snipe	0	1
3	Snipe	0	11
4	Woodpigeon	0	1
5	Kingfisher	1	7
6	Great Spotted Woodpecker	3	14
7	Skylark	0	2
8	Sand Martin	0	14
9	Swallow	23	382
10	House Martin	0	1
11	Tree Pipit	0	13
12	Meadow Pipit	8	48
13	Wren	41	74
14	Dunnock	16	62
15	Robin	24	101
16	Stonechat	0	6
17	Blackbird	14	32
18	Song Thrush	5	7
19	Redwing	0	8
20	Cetti's Warbler	10	28
21	Grasshopper Warbler	2	6
22	Sedge Warbler	63	120
23	Reed Warbler	111	153
24	Lesser Whitethroat	0	2
25	Whitethroat	16	42
26	Garden Warbler	0	21
27	Blackcap	51	300
28	Yellow-browed Warbler	0	1
29	Wood Warbler	0	1
30	Chiffchaff	43	140
31	Willow Warbler	22	94
32	Goldcrest	20	73
33	Firecrest	1	3
34	Long-tailed Tit	17	30
35	Marsh Tit	0	2
36	Coal Tit	0	3
37	Blue Tit	224	394
38	Great Tit	36	127
39	Treecreeper	2	1
40	Magpie	1	1
41	Starling	0	2
42	Chaffinch	30	196
43	Brambling	0	1
44	Greenfinch	3	355
45	Goldfinch	3	444
46	Siskin	0	62
47	Bullfinch	17	19
48	Reed Bunting	40	158

[1] This includes newly ringed birds in the respective years, plus re-trapped birds from previous years when re-trapped for the first time in that year, and controlled birds (those ringed at other sites).

3.3 It is clear from these results (particularly those in Tables 1 and 3) that the scale of the ringing effort at Oxwich has varied considerably between years. More birds of all species other than treecreeper (2 in 2013) and magpie (singles in both years) were trapped in 2014 than in 2013. There is little merit in further analysis of the differences in results between years due to the higher levels of effort in 2014. However, assuming this level of effort is maintained in 2015 a direct comparison with 2014 will be more interesting and relevant (if not overly scientific[2]).

3.4 What is interesting (based on 2014 data) is to look at the patterns of captures of individual species (not corrected for effort) in Table 4 below[3].

Table 4. Selected breakdown, totals and diversity of newly-ringed birds by month in 2014

Species / Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Kingfisher	0	0	0	1	1	0	0	3	0	1	1	0	7
Great Spotted Woodpecker	0	0	0	1	0	7	1	0	2	0	0	0	11
Tree Pipit	0	0	0	0	0	0	0	6	7	0	0	0	13
Meadow Pipit	0	0	0	0	0	0	0	0	34	7	5	2	48
Wren	0	1	0	3	3	7	11	15	7	11	1	1	60
Dunnock	0	1	2	2	4	7	15	5	4	12	2	0	54
Robin	0	0	1	0	9	14	8	10	43	7	1	0	93
Cetti's Warbler	0	0	0	2	0	1	3	7	9	0	1	0	23
Grasshopper Warbler	0	0	0	0	1	0	1	1	2	1	0	0	6
Sedge Warbler	0	0	0	2	5	1	23	73	11	1	0	0	116
Reed Warbler	0	0	0	3	4	7	33	67	30	0	0	0	144
Whitethroat	0	0	0	0	1	1	10	26	4	0	0	0	42
Garden Warbler	0	0	0	0	0	0	1	16	4	0	0	0	21
Blackcap	0	0	0	6	4	51	50	75	102	5	4	2	299
Chiffchaff	0	0	3	4	1	5	6	14	69	30	5	3	140
Willow Warbler	0	0	0	6	3	1	16	55	11	0	0	0	92
Goldcrest	1	0	1	0	0	0	0	2	20	36	9	3	72
Firecrest	0	0	0	0	0	0	0	0	0	2	1	0	3
Blue Tit	28	13	21	5	4	39	31	29	48	53	27	14	312
Great Tit	2	4	5	4	2	43	22	3	9	8	4	1	107
Chaffinch	8	3	17	20	5	19	26	6	25	36	16	11	192
Greenfinch	5	17	82	35	25	24	45	24	26	30	32	8	353
Goldfinch	0	18	102	59	7	26	10	1	62	106	45	7	443
Siskin	0	0	9	34	16	1	0	0	0	0	0	0	60
Reed Bunting	14	14	29	14	1	11	5	3	30	18	3	2	144
Total Monthly Captures:	**58**	**71**	**276**	**203**	**103**	**273**	**323**	**597**	**843**	**383**	**176**	**65**	**3371**
Total Species:	**6**	**8**	**13**	**19**	**23**	**23**	**24**	**31**	**29**	**24**	**24**	**15**	**48**

3.5 This table indicates the peak passage periods for some migrants, but also suggests post breeding dispersal and (potentially) localised seasonal changes in the distribution of resident species (perhaps supplemented by dispersing immigrants). Some of the more interesting results include:

- The low levels of capture of migrant reedbed warblers in the spring and early summer, and the marked increase in numbers in August in particular. This suggests, as is borne out by walking

[2] The total amount of net, and the locations of nets varies between visits depending on the personnel available and the weather conditions. Feeders are generally kept out, but are moved or removed in response to disease in passerine populations. It is not possible to easily correct for these factors, and there would be little merit in trying to do so.

[3] When considering the results presented in Table 4, it should be noted that weather prevented much ringing taking place in January, February and December 2014. As can be seen from the table, this limited the numbers of birds trapped in those months, albeit catches were small when ringing sessions did go ahead.

the edge of the reedbed and the bunds within it, that the number of territorial reed and sedge warblers (the latter in particular) is low, and that it is of greatest importance to passage birds;

- The apparent influx of robins in September. This was very noticeable in the field and in coastal valleys at the time, but also difficult to put into any numerical context.
- The seasonal fluctuations in the number of species such as greenfinch, goldfinch and chaffinch trapped.

3.6 The table also shows the considerable fluctuations in birds ringed between months, and the apparent importance of the site to migrant birds between July and October inclusive in particular. The catch is most diverse in the late summer, when many breeding birds (both residents and migrants) begin to disperse.

Species Accounts

Sparrowhawk

3.7 Sparrowhawks were trapped on five dates between 25 June and 12 October 2014. Three birds were ringed, all of which were recently fledged males, suggesting local breeding. One of these birds was subsequently re-trapped on two occasions.

3.8 The birds had wing lengths of between 198 and 202mm (Baker [1993] notes that female wing lengths are in the range 222-256mm and males 188-212mm).

3.9 Evidence of near misses included the carcass of a song thrush left in the net shortly after a sparrowhawk had been seen being mobbed over the marsh by magpies, and a couple of observations of birds bouncing out of nets.

Jack snipe

3.10 A bird was trapped on 25 November 2014 in an l-shaped configuration of nets erected with the primary purpose of capturing common snipe. A common snipe was captured in the same area at the same time.

3.11 The jack snipe was aged as a 1st winter on the basis of a narrow outer primary feather, the pattern of the undertail coverts (not spotted / streaked), the pattern of the wing coverts and a number of other supporting features. In the hand the features of the two snipe species: the pale central crown stripe of the common snipe and the dark crown of the jack, and the far longer bill of the common snipe were obvious. However it was the comparative size of the birds that was most noticeable. Measurements of the respective birds were wing 112mm and weight 57.7g (jack snipe) and wing 134mm and weight 107.2g (snipe). A second common snipe caught later had a wing of 132mm and a weight of 96.7g.

Snipe

3.12 One of the aims of the early winter of 2014/15 was to see if we could catch snipe in good enough numbers to make capturing them one of the core aims for future years. To target them we initially strimmed out a ‘lawn’ in the marsh, part of which rapidly became inundated. However, as water levels changed, snipe use of the area changed, and it became less productive (there are numerous areas for snipe to forage in and around the marsh). Our greatest success was obtained by putting out nets in rush-dominated communities on the edge of a large pool (the South Pond). It appears that this area is a day roost for snipe, and by erecting nets a few hours before first light and walking slowly through the area around dawn, we were able to flush birds into them. A labour intensive exercise, as the nets did not function after the first ‘drive’.

3.13 Between early November and early December we managed to capture 11 birds (plus the jack snipe referred to above). We tentatively aged them, using the pattern of the tips of the coverts and a number of other supporting features as a mixture of adult (5) and first winter birds (5) with the age of one bird left undetermined. We found them very challenging to confidently age, but will hopefully become more comfortable with experience and are establishing a library of images of the wings of birds.

3.14 The wing length of the snipe varied a little (between 129 and 140mm), but weight varied considerably. The heaviest individual was 140g, and the lightest 83.3g.

Woodpigeon

3.15 An adult woodpigeon was trapped in the NRW compound on 28 June 2014.

Kingfisher

3.16 Kingfishers were trapped on five dates between 18 April and 5 November 2014, including three on 9 August 2014. A total of seven birds were captured, of which five were females. The wing lengths of the birds were in the range 78-81mm, but weight varied more widely (34.7-41.9g).

3.17 An interesting local movement was reported in August. An adult male kingfisher ringed early in the month (9 August) at Oxwich was recovered on the Burry Inlet at Llanrhidian by Barry Stewart (26 August). When re-trapped, the weight of the bird had increased by approximately 4g. Llanrhidian is approximately 5.5km to the north north-west of the marsh. It seems unlikely that the kingfisher commuted to the site directly, as this would have involved flying over Cefn Bryn, the red sandstone ridge that forms the 'backbone' of the peninsula, and which is set within an extensive area of moorland.

3.18 Evidence of a kingfisher near miss was provided in early August when a small fish was found in a net in the fen meadow.

Great spotted woodpecker

3.19 Eleven individuals were trapped, all in nets around the feeders. These birds were regularly re-trapped during the year. Seven of the woodpeckers were recently fledged juveniles and were captured in June. Four were captured on 14 June alone.

Skylark

3.20 In response to overhead passage of skylark in late October, we tried some taping in the NRW compound. This attracted small flocks of skylark, and we eventually trapped two birds.

3.21 The moult strategy of skylark, with adults and juveniles undertaking a full post-breeding and a full post-juvenile moult respectively, makes ageing straightforward (you can't do it in the late autumn – code 2 [unknown]).

3.22 What was noticeable in the hand was the size of the birds. The larger of the two, which weighed 38.9g, was around twice the typical weight of a meadow pipit.

Sand martin

3.23 Small numbers of sand martin were trapped among swallows during evening visits to the marsh in August and September. Fourteen birds were captured, all of which were recently fledged juveniles. Due to the number of Hirundines captured during these visits, full biometrics were not taken. The birds were over-nighted in specially made roost boxes.

Swallow

3.24 Apart from one swallow caught by chance in a mist net in May 2014, all of the other 381 individuals ringed at the marsh in 2014 were trapped at dedicated evening roost sessions during mid-August and early-September.

3.25 During these sessions three sixty-foot nets were erected, and swallow song was played from approximately 1-hour before sunset until after the birds had come into roost.

3.26 These sessions (3) proved very successful, although only 75 swallows were caught during the final one (on 10 September) as a sparrowhawk dispersed a large proportion of the birds just prior to dusk.

3.27 The total of 382 swallows trapped over the year was made up of 323 juveniles and 59 adults. The depth of the tail fork and the total length of the tail were measured in the adult swallows, as there is limited between-sex overlap in these measurements.

3.28 Of 76 birds for which a range of biometric data were recorded, wing length varied between 118-131mm and weight between 17.4 and 25.1g inclusive.

House martin

3.29 A recently fledged house martin was among the swallows and sand martins ringed on 18 August 2014.

Tree pipit

3.30 Tree pipits were captured on five dates between 23 August and 9 September inclusive. Audio was used to lure birds towards nets on days that they were initially heard calling in flight overhead.

3.31 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 were often immediately apparent, along with plumage features.

3.32 All of the thirteen birds were recently fledged juveniles. Weights varied between 18.3 and 25.1g and wing length between 82 and 90mm. Only two birds were carrying significant body fat.

Meadow pipit

3.33 Meadow pipits were captured between early September and early December. Whenever flocks were noted on the marsh or overhead passage of birds was apparent, audio equipment available and wind speed conducive, we tried taping for them.

3.34 Of the total of 48 birds ringed, nine were adults and the remainder first winter birds. Factors used in ageing include the shape, colour and definition of the margins of the greater coverts, the shape and size of the black 'teeth' in the median coverts, and obvious retained juvenile flight feathers (particularly un-moulted tertials). Wing length varied between 72 and 84mm and weight between 14.6 and 21g (with most birds weighing between 17-20g).

Wren

3.35 Wren holds territory in various locations around the marsh, and fledglings made up the majority of the birds captured (46 of 60), with the first caught on 21 June. With reference to Table 4, it can be seen that wrens were captured most frequently between June and October inclusive.

3.36 There were no recaptures of birds ringed prior to the recommencement of ringing at the marsh in 2013 (a three year old wren was captured in 2013) and no recoveries of birds ringed elsewhere.

Dunnock

3.37 Of the 54 dunnocks ringed at the marsh in 2014, 44 were recently fledged juveniles and 10 were adults. The first fledged juvenile was noted on 24 May, but brood patch development was noted in females as early as February 2014. Wing length in dunnocks varied between 65 and 71mm and weight between 17.9 and 24.6g. The regular recapture of ringed birds indicates a large local breeding population.

3.38 Dunnock X872270 ringed in October 2009 as an adult was recaptured in June 2014. This bird was therefore at least (approximately) six years of age when recaptured, as it would have fledged in mid-2008.

3.39 More notable, however, was dunnock X901288. This bird was originally ringed at Creeting St Mary in Suffolk in September 2009, but was re-trapped on the marsh on 1 March 2014. A movement of 364km west. There are few substantial movements of dunnocks noted within the UK. This control

is therefore likely to feature in the end of year BTO ringing report as one of the largest movements of this species recorded in 2014.

Robin

3.40 A total of 101 unique robins were trapped on the marsh in 2014, of which 93 were new and 8 were re-trapped birds originally ringed in 2013.

3.41 An influx of robins to the marsh was noted in September, when 43 new birds were captured. Some of these birds were carrying significant fat, indicating that they were in the process of making a migratory movement.

3.42 Robin holds territory at the marsh, and the first fledged juvenile was trapped on 13 May. Considerable differences in size were noted between birds, with the smallest adult weighing 15.6g and the largest 23.3g. Wing length varied between 65mm and 78mm.

Stonechat

3.43 Six individual stonechats were trapped on the marsh in 2014: three males and three females.

3.44 The first were a pair spring-trapped in March 2014 using a mealworm as bait and a tape lure. The remainder were caught in the fen meadow nets between September and November inclusive.

3.45 The birds weighed between 14.1 and 15.9g and had wing lengths of 62-68mm.

Blackbird

3.46 A total of 32 unique blackbirds were processed at Oxwich Marsh in 2014. The species breeds locally, but despite this only 1 blackbird was caught before the end of April 2014: 2015 will establish whether this was an anomaly. The first fledgling was trapped on 3 May.

3.47 Birds had a wing length of 120-137mm (the largest being caught in November) and weights of 81.3-111.2g (in 2013 a blackbird with a weight of 128.5g was trapped).

3.48 On 6 December 2014 a blackbird with a very odd moult pattern was captured. The bird, a re-trapped juvenile fledged a few months before, appeared to have replaced its tertials, its coverts and several primaries, but had retained some secondaries, its inner-most primary, and its outer primaries. Retained feathers were bleached, more worn and pointed than the darker, more rounded replaced feathers. The bird had also replaced all of its tail feathers. This pattern of moult is completely anomalous.

Song thrush

3.49 Seven unique song thrushes were captured in 2014. Six were juveniles and the seventh a re-trapped bird initially ringed in 2013. Song thrush held territory around the marsh: however, it was unclear whether there was local productivity as all birds were trapped well after the breeding season (between early September and the end of the calendar year).

Redwing

3.50 Eight redwing were captured between 22 November and 13 December 2014. During this time it appeared that small numbers were roosting in trees / scrub around the fringes of the reedbed. Of the eight birds, two were adults and the remainder first winters.

Cetti's warbler

3.51 Cetti's warbler is one of the most obvious species at Oxwich Marsh due to its explosive song. At least six males hold territory in scrub around the edges of reedbed (based on the peak number of singing males in 2014).

3.52 A total of 28 unique birds were captured. Of these, 23 were newly ringed birds. The largest numbers were captured in August and September, with many aged as juveniles and others of

indeterminate age (as adults and juveniles are very difficult to reliably separate following post breeding moult in the former).

3.53 The most interesting capture of the year was Cetti's warbler X343718. This bird was not ringed at Oxwich, so will hopefully provide some interesting evidence of post-breeding / post-juvenile dispersal when data concerning its initial capture received.

Grasshopper warbler

3.54 Grasshopper warbler was recorded reeling at Oxwich Marsh between 12 April and 3 May inclusive. Two birds were present on 3 May.

3.55 There was no clear evidence of breeding, as a bird trapped on 3 May did not show a cloacal protrusion or a brood patch, and the first juvenile bird was not trapped until 3 August. Following this, a further four juveniles were captured, the last of these being on 5 October. Juveniles captured in September and October were carrying significant fat (scores of 5 and 6) indicating that they were actively migrating or preparing to do so.

Sedge warbler

3.56 A total of 120 unique sedge warblers were captured at Oxwich in 2014. With reference to Table 4, it can be seen that the site appears to be of greatest importance to the species during autumn passage. On some days during the passage period large numbers can be trapped (e.g. 41 on 7 August 2014), but these influxes are typically short-lived (a session on 9 August 2014 resulted in only 4 sedge warblers being trapped for example). Even more dramatic 'falls' were apparent at Llanrhidian this autumn, where Barry Stewart captured 71 sedge warblers in only a few nets during a short morning session on 3 August.

3.57 Sedge warbler does hold territory on the marsh, but numbers appear very low (far lower than reed warbler). The first returning migrants were heard on 17 April, and two were subsequently trapped the following day. The first young birds were trapped on 20 July and the final record of the species was on 2 October. During autumn migration some birds were carrying considerable fat: the heaviest weighed 13.7g (although in 2013 a bird weighing 14.7g was recorded so this is not exceptional).

3.58 There were two foreign controls among the total of unique birds. These were birds ringed under the French and Spanish ringing schemes, and bore rings marked Paris and San Sebastian respectively (data concerning them are awaited). A further bird was captured at Oxwich on 31 August 2014 and re-trapped at Icklesham, East Sussex a week later (a distance of 345km east south-east of the site).

Reed warbler

3.59 A total of 153 unique reed warblers were trapped on the marsh in 2014. The first birds were heard singing (5+) on 17 April, and two birds were trapped the following day. Birds breed at low density in the marsh (there is no wall of sound at dawn and individual territories can be determined), with the first fledgling trapped on 21 June.

3.60 As can be seen with reference to Table 4, numbers of birds trapped were low in the spring and early summer, but increased in July, when approximately 75% were fledged juveniles, and peaked in August during autumn passage. The last bird of the year was trapped on 27 September.

3.61 There were a number of interesting controls and recaptures of reed warblers in 2014. Most notably, a bird ringed at Conchemarche, Mortagne-sur-Gironde, Charente-Maritime, France in August 2011 was controlled on the marsh on 24 April and again on 7 August 2014. This shows that the bird used the site during spring and autumn passage, but it would have been very useful to capture it between these dates (or potentially for it to be controlled elsewhere) to confirm where it bred.

3.62 Reed warbler X223278 ringed as an adult in August 2009 was recaptured in July 2014. This bird was therefore (at least) six years of age at the time of recapture. L040136 was ringed as a juvenile in August 2010 and recaptured in July 2014, so was a more modest four years of age, while

Y326071, ringed at Teifi Marshes as a juvenile in August 2011 and re-trapped at Oxwich in July was three.

3.63 Size and weight varied. Wing lengths were between 60-69mm, with those at the bottom end of the range checked against the identification criteria for Blyth's reed warbler and those at the top end against those for marsh warbler. Weight varied between 8.7g and 15.6g (although the latter was an outlier and the second highest recorded weight was 12.7g).

3.64 As in 2013, despite clear evidence of passage in August and September, only a few birds were noted carrying extensive fat reserves (scores of 4 or above).

Lesser Whitethroat

3.65 Two lesser whitethroats were captured: an adult on 26 July and a juvenile on 7 August.

Whitethroat

3.66 Forty-two unique whitethroats were captured in 2014, with four of these subsequently re-trapped. Only four were adults. The first bird was caught on 24 May and the last on 20 September.

3.67 Birds bred in scrub around the fringes of the reedbed, and the first fledgling was captured on 5 July. A barely fledged juvenile (with primary feathers in pin) was trapped on 3 August.

3.68 The largest numbers of birds were trapped in early to mid-August, with seven on 7 August and nine on 16 August: all but one August whitethroat was a juvenile bird.

3.69 Wing lengths varied between 67 and 76mm, and weight between 11.8 and 19.2g. The three heaviest birds were also the latest, with all being captured in September.

Garden warbler

3.70 Garden warbler is an uncommon passage migrant in Gower, and a scarce breeder. In some years there are no autumn records of the species listed in the Gower Bird Report. It was therefore unexpected to catch 21 unique birds in 2014.

3.71 Garden warblers were captured between 26 July and 6 September inclusive. All but one of the birds was juvenile. Weights were similar to blackcap (see below) with a range of 14.7-22.5g recorded.

3.72 Garden warblers were mainly captured in the reed bed, and responded very well to audio recordings.

Blackcap

3.73 A total of 300 unique blackcaps were processed in 2014: the species breeds in scrub and woodland around the marsh, but is also caught in large numbers in the reed bed during autumn passage / as young birds disperse.

3.74 The first blackcap was trapped on 12 April and the last on 13 December, with fledglings noted from 7 July. No birds were captured between 13 and 31 October inclusive (despite good ringing conditions and a number of sessions), and it seems reasonable to assume that birds captured before 13 October were part of the UK breeding population, and that those occurring from 1 November onward (a total of six) were winter immigrants from Northern Europe.

3.75 The weight of birds varied between 14.6g in June and 24.3g in September, with the latter bird having substantial fat deposits. Forty-four birds in excess of 20g in weight were recorded, all in August and September, indicating preparation for migration / actively migrating birds.

3.76 A bird initially ringed at Portishead, North Somerset, on 22 August was controlled at the marsh on 13 September (a westerly movement of 99km), and a bird ringed at the marsh on 6 September was recovered in Fareham, Hampshire on 22 September (220km to the east south-east).

Yellow-browed warbler

3.77 In mid to late autumn 2014 we used audio to create the impression of a mixed flock of warblers around the scrub nets. This worked very well with regard to captures of goldcrest and firecrest, and on 25 October we also trapped a yellow-browed warbler.

3.78 Svensson (1992) indicates that yellow-browed warbler can be sexed on wing length, with male wings being between 55-60mm and females 51-56m (based on a sample size of 595 birds). Our bird had a wing of 59mm, which lies outside the zone of overlap, and indicates it was a male. It was carrying fat (score of 3) and weighed 7.1g. The tail feathers of the bird were narrow and abraded, suggesting a 1st winter.

Wood warbler

3.79 A wood warbler was captured on 3 May 2014 in the scrub nets. This was unexpected, as the species does not breed on Gower and is rarely recorded on the peninsula.

3.80 The wood warbler had a wing length of 77mm, substantially longer than the typical parameters of willow warbler (60-70mm) and chiffchaff (53-68mm). In the net its size was instantly apparent, with the clean white underparts, lemon yellow throat and colouration of the upper parts confirming identification. It was not in breeding condition, so could not be sexed.

Chiffchaff

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

3.82 A total of 140 unique birds were trapped in 2014. There were no re-traps from previous years. Catches indicated that peak numbers occurred between mid-September and early October (14 were trapped on 23 September, 13 on 27 September and 15 on 2 October). The first fledged juvenile was caught on 21 June.

3.83 Weights varied between 5.7g and (an unexceptional) 9.8g, and wing lengths between 50 and 66mm.

3.84 On 15 November a striking Siberian-type (*tristis*) chiffchaff was trapped. It had very pale underparts, with no yellow on the flanks or throat, was grey brown on the head and back and only showed any green on the flight feathers. There was a very obvious broad supercilium that extended well past the eye. The bird did not call, and the determination of *tristis* on plumage characters alone is not considered 100% accurate: however there is little doubt that the bird was of this subspecies.

Willow warbler

3.85 Ninety-four unique willow warblers were trapped on the marsh in 2014. These included two birds initially ringed at the site in 2013.

3.86 Willow warblers breed around the marsh. The first bird was trapped on 12 April and the last on 16 September. The first fledglings were caught on 12 July.

3.87 Weights varied between 7.2 and 10.9g, with the heaviest birds recorded being the later migrants, and wing length between 60 and 71mm.

Goldcrest

3.88 Seventy-three unique goldcrests were trapped at Oxwich in 2014. This number included one bird originally ringed in 2013. The species is scarce in the marsh for much of the year, but is relatively common in September and October. Our capture rate is likely to have been much improved through the use of audio playback of calls.

3.89 Sex was confirmed in 71 of the goldcrests: there were 47 males and 24 females captured. They weighed between 4.7g and 6.2g, and had wing lengths of 47-57mm.

Firecrest

3.90 Firecrest is a scarce but regular winter visitor in Gower. In 2013 we trapped a male on 16 November. The bird had a wing length of 53mm and a weight of 5.3g.

3.91 In 2014 three firecrests were captured, all of which were determined as 1st winter females. Birds were captured on 25 October (2) and 1 November. The wing length of all three was 50mm, and the weights 5.0, 5.2 and 5.8g respectively.

Long-tailed tit

3.92 Thirty unique long-tailed tits were processed at Oxwich in 2014. Of these, 24 were ringed and 6 re-trapped, having been originally ringed in 2013. The first juvenile was caught on 14 June, but there was no clear evidence of local breeding.

3.93 Wing length varied between 56 and 64mm and weight between 7.0g and 8.8g.

Marsh tit

3.94 Marsh tits were caught in late July and early August 2014. The two birds trapped were juveniles. They were both subsequently re-trapped on several occasions.

3.95 The species holds territory in broad-leaved ancient semi-natural woodland to the north and south of the marsh.

Coal tit

3.96 Coal tits were trapped on three dates: 24 April, 3 May and 14 June. It is generally scarce on the marsh, but is likely to breed in mixed woodland on the Penrice Estate to the west. One of the birds was partially leucistic. All three were adults.

Blue tit

3.97 Three hundred and ninety-four unique blue tits were processed at Oxwich in 2014. Numbers were consistently high throughout the first three months of the year and from June to December inclusive, with the lack of suitable weather for regular ringing in December, January and February making numbers in those months look artificially low (with reference to Table 4).

3.98 One blue tit appears to be a control (as opposed to a bird ringed at the marsh during or prior to 2010), and data are awaited that will confirm its origin. The oldest re-traps were birds initially ringed by Barry Stewart in October 2009 (2) and September 2010 (as juveniles), and recaptured in July, August and May 2014 respectively (the older two of the three will have been at least 5 years of age when re-captured).

3.99 The first juveniles were caught on 14 June.

Great tit

3.100 A total of 127 unique great tits were trapped on the marsh in 2014. The species breeds locally, and the first juveniles were trapped on 1 June. The total of unique birds included 107 newly ringed, 17 re-traps from 2013, two re-traps from November and December 2008 and a control bird.

3.101 The re-traps from 2008 will have been at least six years of age when captured in 2014, as they are likely to have fledged in June 2008 (both were initially ringed as juveniles).

3.102 The control bird had been ringed by Cedwyn Davies in Briton Ferry in October 2012, since which time it had moved approximately 25km in a west south-westerly direction: a good movement for a great tit, which is considered a relatively sedentary species.

Treecreeper

3.103 A juvenile treecreeper was captured on 26 July. In 2013 two juveniles were captured (in July and August).

Magpie

3.104 A magpie was trapped on 13 May in the net across the Natural Resources Wales compound. It was aged as a second calendar year bird, weighed 159.7g and had a wing length of 183mm.

Starling

3.105 Two starlings were captured during a swallow roost session on 18 August 2014. At this time several hundred starlings were roosting in the marsh.

Chaffinch

3.106 Chaffinches were commonly trapped throughout the year, and were regular visitors to the feeding station. A total of 196 unique birds were processed. These included three birds originally ringed in 2013. The first juveniles were recorded on 1 June, and the species appears to be a common breeder at the local level.

3.107 A male chaffinch ringed as an adult in March 2010 was recaptured in November 2014. This bird is likely to have fledged in 2008 (or before) and was therefore at least six years old when caught.

3.108 Weights varied between 15.6 and 28.1g and wing lengths between 76 and 91mm. The three largest birds were all captured during the winter months suggesting they might be continental immigrants.

Brambling

3.109 A first winter female brambling was trapped on 5 November. It had a wing length of 86mm, a weight of 25g and was carrying considerable fat, indicating it was actively migrating. Visible migration of finches over Mumbles Hill (to the east of the site) was noted during the early morning of the same day.

Greenfinch

3.110 A total of 355 unique greenfinches were processed at Oxwich in 2014.

3.111 The species breeds locally, and the first juveniles of the year were trapped on 1 June.

3.112 The wing lengths and weights of the birds varied between 78 and 92mm and 18.6 (an emaciated bird) and 34.7g respectively. Most birds were sexed: 152 females and 170 males were trapped.

3.113 Table 4 indicates that the numbers of birds captured peaked in March, with a secondary, smaller peak in July. The former peak may be related to the availability of food away from feeding stations in the late winter, while the second peak reflects the number of young birds attending feeders in the late summer.

3.114 The only report of a ringed greenfinch from Oxwich was a bird found dead inside a feeder at Knelston, some 3km to the north-west.

Goldfinch

3.115 A total of 444 unique goldfinches were processed at Oxwich in 2014, making this the most abundant species captured in 2014. These included a bird initially ringed in 2013 and re-trapped this year.

3.116 The species breeds locally, and the first juveniles of the year were trapped on 14 June. Wing length and weight of goldfinches varied between 70 and 84mm and 12.0 and 19.1g respectively.

3.117 Table 4 indicates considerable fluctuations occurred in terms of the number of birds trapped on a month-by-month basis. For example 102 new birds were ringed in March (54 were captured on 1 March) and 106 in October, but only one in August and seven in May. This indicates movements of this species occur in the spring and autumn (as might be expected).

Siskin

3.118 Siskins were trapped between 1 March and 28 June. A total of 62 unique birds were captured.

3.119 The species bred on the marsh in 2014, perhaps in response to the opportunity provided by the feeding station. The first of eight juveniles trapped was captured on 3 May.

3.120 Two controls were returned: a bird ringed at Minehead in October 2012 was captured in June 2014; and a bird ringed at Cradley, Herefordshire in March 2013 was captured in March 2014

Bullfinch

3.121 A total of 19 unique bullfinches were processed at the marsh in 2014. Fifteen newly ringed birds and four re-traps from 2013 made up this total.

3.122 There were no (obvious) territories close to the ringing rides, but breeding is likely to occur in the local area, and the first juvenile was trapped on 3 August.

3.123 Reed bunting

3.124 A total of 158 unique reed buntings were processed at Oxwich Marsh in 2014. The total comprised 144 newly ringed birds and 14 recaptures from previous years.

3.125 The species occurs on the marsh year-round, and the first juveniles were trapped on 14 June 2014. There was evidence of passage with peaks in the number of reed buntings captured in March and September / October (cross reference Table 4).

3.126 The oldest birds were V931950, initially ringed in July 2008, and X223259 ringed in August 2009. The former is a male bird, and was recaptured in both March and May, so is likely to hold territory on the marsh. The latter was re-trapped in July, and is a female that appears to breed on the marsh. The older of the two would have been at least 6 years and 1 month old when recaptured.

4 Conclusions

4.1 The second year of ringing at Oxwich has proven very successful. We have expanded operations significantly, trapped a number of interesting species, and gathered some useful data on a range of common birds (at the marsh) that we can build upon in future years.

4.2 Controlling a range of species at the marsh, particularly foreign-ringed sedge and reed warblers has been very encouraging, and our understanding of the use of the area by passage migrants has grown.

4.3 The size of the group and the readership of the Gower Ringing Blog have also both increased, which is very welcome, as the group needs new blood in order to further expand what can be achieved at the marsh, and at other sites, in the medium term. 2015 should be another really good year.

5 Acknowledgements

5.1 Various people have supported the ringing work at Oxwich Marsh in 2014.

5.2 Nick Edwards (of Natural Resources Wales), who manages the marsh, has been helpful whenever called upon, and open and responsive to our ideas where possible. Thanks are due for continued access permission, the provision of a key to the site and seed for the feeding station.

5.3 Thanks are also due to members of the Gower Ringing Group, particularly those who have attended regularly over the course of the year and provided the impetus and commitment to up our efforts: Heather Coats, Charlie Sargent, Cedwyn Davies, Keith Vaughton, Wayne Morris, Emma Cole, and latterly, Darren Hicks. Thanks are also due to Hannah Meinertzhagen and Gail Cobbold, who have helped by transcribing the results, and to Barry Stewart who encouraged me to start ringing at the site.

Appendix 1: Photographs

Photo 1.

Brambling (Keith Vaughton) 05/11/14

Photo 2.

Firecrest (Keith Vaughton) 25/10/14

Photo 3.

One of 21 unique garden warblers captured during the autumn of 2014 (Owain Gabb).

Photo 4.

A juvenile kingfisher from 9 August 2014

Photo 5.

Partially leucistic coal tit (Owain Gabb) 14/06/2014.

Photo 6.

Common snipe (left) and jack snipe (right), (Cedwyn Davies) 25/11/2014.

Photo 7.

Redwing (Keith Vaughton) 22/11/2014.

Photo 8.

Skylarks (Charlie Sargent), 28/10/2014

Photo 9.

Tristis and *collybita* chiffchaffs (Charlie Sargent) 15/11/2014.

Photo 10

One of 13 tree pipits trapped in 2014 (Owain Gabb)

Photo 11.

Wood warbler (Charlie Sargent) 03/05/2014.

Photo 12.

Yellow-browed warbler (Charlie Sargent), 25/10/2014