

Annual surveillance of choughs in the Pembrokeshire Coast National Park-2018

Skomer & Skokholm SPA

A report to the Wildlife Trust South & West Wales Islands Advisory Committee, and to the Pembrokeshire Coast National Park Authority and Natural Resources Wales

1 Introduction

The Pembrokeshire Coast National Park supports a nationally/internationally important chough population that has been the subject of annual surveillance since the early 1980s. The main focus of the annual surveillance work is on the distribution and numbers of breeding pairs and on productivity, in line with the Chough Conservation Strategy for Pembrokeshire (Hodges (Ed.), 1994). Information on the numbers and distribution of choughs outside the breeding season has been collected on a much more *ad hoc* basis e.g. during snap-shot surveys in the autumn and winter such as the Winter Coastal Bird Survey carried out in February 2011 (Haycock & Hodges, 2011).

A key component of the annual surveillance of chough populations in the National Park is the surveillance of breeding choughs within the Skomer & Skokholm SPA, for which the chough is a feature of European importance. Similar work is carried out in respect of the Ramsey & St Davids Peninsula Coast SPA and the Castlemartin Coast SPA for which the chough is the feature of European importance.

The data collected on Skomer and Skokholm Islands during the 2018 breeding season are summarised in this short report, together with observations on the chough feature of the SPA in the context of the National Park as a whole. Factors that may have influenced the breeding (and non-breeding) chough population within the SPA and in the rest of the National Park are briefly considered.

2 Surveillance methods

2.1 Breeding choughs

The annual surveillance of breeding choughs in the National Park is carried out on a territory-by-territory basis. On the mainland, historic or traditional territories as well as currently or recently occupied territories are visited at intervals between mid-March and late May to ascertain the following:

- Whether or not territories are occupied;
- Whether or not the pairs occupying those territories attempted to breed (i.e. they got at least as far as building or refurbishing a nest);

- Whether or not completed nests contain eggs (as deduced from observing the behaviour of the pairs occupying the nest sites).

Follow-up visits are made between late May and mid-July to confirm:

- The stage at which any attempts to breed failed;
- If (and how many) young fledged from each nest site.

On Skomer and Skokholm Islands, data on occupied territories, breeding pairs and non-breeding choughs present on the islands are collected on a regular basis by the islands staff and volunteers.

The criteria used to determine the breeding status and subsequently the different stages of the breeding season are based on standard methods used to interpret behavioural observations during e.g. the Decadal Census carried out in 2002 (Johnston *et al*, 2007). These are set out below, together with the equivalent criteria/definitions that are used in national surveys under e.g. the Statutory Conservation Agencies/RSPB Rare Breeding Birds Survey (SCARABBS) (JNCC, 2002; JNCC, 2004).

Territory occupied: evidence of territorial and courtship behaviour; territorial behaviour elicited by other choughs entering a pair's territory; assumed pairs visiting known or potential nest sites; two birds (assumed to be a pair) foraging near a known or suspected nest site on at least two occasions during the breeding season but no other behaviour observed that suggests attempted breeding (this equates to the term "*possible breeding pair*" used by SCARABBS);

Pair attempting to breed: evidence of nest-building or refurbishment of an old nest, and nest lining e.g. with wool; male observed feeding female; mating observed; visits to potential nest sites e.g. "one in; two out" observed but no other indications of breeding success i.e. no young seen or heard in the nest; no faecal sacs observed to be removed from the nest and no young seen during the expected fledging period (this equates to the term "*probable breeding pair*" used by SCARABBS);

Eggs in the nest: behavioural evidence indicating that the female is incubating eggs (e.g. the male feeding alone and making regular return visits to the nest site to feed the female; the female leaves the nest for short periods of time only, to exercise, preen and forage usually along-side the male before returning to the nest: "one in; two out; one in and stays in" (this equates to the term "*confirmed breeding pair*" used by SCARABBS);

Young in the nest: behavioural evidence e.g. adults visiting a nest with food and leaving it a short while afterwards, followed (typically) by bill-wiping on a perch nearby; bringing out of faecal sacs (or egg shells) for disposal away from the nest (often over the sea): two in; two out and two away" but returning to the nest c.15-30 minutes later where-by they repeat the above behaviour; aggressive behaviour

towards other birds e.g. ravens, carrion crows and peregrine falcons which are known to predate young choughs. Food-begging calls from young in the nest: well-grown nestlings can sometimes be heard calling in the nest from the cliff tops above, although caution should be exercised as young jackdaws can sound remarkably similar to young choughs (this equates to the term “*confirmed breeding pair*” used by SCARABBS);

Number of young known to have fledged: noisy family parties out on the cliffs and coastal slopes; adults feeding recently fledged young; aggressive/defensive behaviour in the presence of potential predators or in some circumstances, other choughs that are deemed to be within the family’s foraging territory and therefore competing with the family for food. Features such as bill length, and colour of the bill and legs, calls/voice and general demeanour e.g. proficiency of flight (which increases rapidly after the young have left the nest) can be used to gauge how long young choughs have been out of the nest. Return visits are often required at this stage, in order to be certain about the outcome of breeding attempts. Within a few days of fledging, family groups become highly mobile often moving considerable distances away from the nest site. The task of determining how many choughs fledge from each nest site becomes increasingly difficult as time goes on.

Note on unconfirmed pairs

Each year, presumed pairs (sometimes only single birds) are likely to be observed at locations with known or potentially suitable nest sites (including sites not known to have been recently occupied). These birds do not quite fit the “territory occupied” criteria. They can include birds visiting a potential nest site in April or May but there is insufficient evidence of regular occupancy e.g. no obvious courtship behaviour, no interactions with other choughs or they are not seen during later visits.

Such birds could be young, non-breeding pairs that are prospecting. They might also be two non-breeding (e.g. same sex) birds that are not part of a non-breeding flock. They could still be quite mobile and not yet attached to any one particular location. In some instances, they might just be birds from an adjacent confirmed territory/nest site that are possibly extending their territory (e.g. to increase their foraging territory).

Where such uncertainties over the status of birds arise, a question mark is entered into the territory occupancy column in the records. Visits in future breeding seasons may clarify whether (or not) such pairs are definitely occupying a territory. These birds and sites are not added to the annual totals and the sites themselves remain unclassified.

2.2 Non-breeding choughs

Information on non-breeding choughs and on important foraging areas/habitats is collected during visits to check on the status of breeding pairs. Experience suggests that data on non-breeding choughs can only reliably be collected between mid-

March (by which-time, pairs are settled in their territories) and the first half of May, after-which the situation can become confused by failed breeding birds which may leave their territories from time-to-time to associate with any non-breeding choughs that are in the area. Later-on in the season, flocks of failed and non-breeding birds are joined by juveniles as they disperse from their natal territories, further complicating the situation.

Recording non-breeding choughs during the spring has a further advantage: it provides a good indication of how well (or otherwise) the less experienced birds without a territory have survived the preceding winter and are therefore potentially available for recruitment to the breeding population.

The task of estimating how many non-breeding birds there are on any given section of the coast or island at any one time is made difficult by the highly mobile nature of non-breeding birds: they can turn up almost anywhere on the coast at any time. If, however a similar number of non-breeding birds are observed or are reported using (e.g. for foraging or roosting) a particular part of the coast (or island) on more than one occasion during the spring, then it can be assumed that the coast at that location is likely to be supporting those non-breeding birds on a regular basis. Repeat observations of non-breeding birds using a particular area are used as the basis for estimating the total number of non-breeding choughs in the SPA (and in the National Park as a whole).

2.3 Data storage and management

Data collected during the annual surveillance of the breeding and non-breeding chough populations for the whole of the National Park are stored on an Excel spreadsheet, a copy of which is made available to the Pembrokeshire Coast National Park Authority (PCNPA) and NRW. They are also summarised and presented in a series of individual reports (of which this report is one) to NRW and PCNPA for the three SPAs for which the chough is a (or the) feature of European importance, and for the National Park as a whole.

Chough datasets for the National Park are also stored in an Access data base (Recorder 6). These data include nest occupancy records, non-breeding chough flock counts (where location information is available) and communal roost counts. Spatial records of nest sites and locations of communal roost sites are also stored using a GIS package (MapInfo).

3 Summary of the data collected in the SPA in 2018

3.1 Breeding population

Data obtained for the breeding and non-breeding chough population and on productivity in the SPA in 2018 are summarised on Tables 1 and 2, below. A more detailed summary of data for the breeding population on a territory-by-territory basis is provided in the annex to this report.

Table 1: General summary of data on the chough population in the SPA in 2018

Status	Skomer	Skokholm	SPA total	% PCNP total
No. occupied territories	5	2	7	9
No. pairs attempting to breed ¹	5	2	7	10
No. nests with eggs	5	2	7	10
No. nests with young ²	2	1	3	5
No. successful pairs ³	1	1	2	4
No. young known to have fledged	2	2	4	3
No. non-breeding choughs	10-14	8	10-14 ⁴	16-18
Notes				
¹ For the purpose of this report, a pair attempting to breed is defined as a pair that got at least as far as building or refurbishing a nest				
² The total includes confirmed nests with young only				
³ A successful pair are defined as a pair that is known to have fledged young in 2018				
⁴ The flocks of up to 10-14 non-breeding birds seen on Skomer, Skokholm and on the mainland “opposite” in spring 2018 were most likely to have been the same birds commuting between the islands and the mainland-see under 2.3 in the main text				

Table 2: Productivity

Productivity expressed as:	Skomer	Skokholm	SPA as a whole	National Park
Ave. no. young fledged/occupied territory	0.4	1	0.6	1.5
Ave. no. young fledged/pair attempting to breed	0.4	1	0.6	1.7
Ave. no. young fledged/successful pair	2	2	2	2.5

The data summarised in Table 1 indicate that the number of territories occupied in the SPA in 2018 was seven, an increase of two from the 2017 total (Hodges, 2018). The number of pairs attempting to breed in the SPA in 2018 was also seven, two more than in 2017. All seven pairs that attempted to breed got at least as far as the egg incubation stage however, only two pairs (one on each island) were known to have fledged young in 2018. There was a question mark over the Payne’s Ledge

nest site, where a group of three choughs was observed hanging around on one occasion in July, at the end of the expected fledging period. The possibility that this group was the Payne's Ledge pair with a juvenile cannot be ruled out (it would appear that there were definitely young in the nest: at least one feeding visit to the Payne's Ledge nest was observed by R. J. Haycock from a boat during a seabird survey on 21st June). However, in the absence of confirmatory evidence that any young fledged from this site, the outcome has been recorded as "unknown".

In 2018, Skomer and Skokholm between them accounted for approximately 9% of the total number of occupied territories and 10% of the total numbers of pairs that attempted to breed in the National Park. Around 3% of the total number of choughs known to have fledged from nest sites in the National Park did so from nest sites within the SPA.

The figures in Table 2 indicate that within the SPA, productivity expressed as the average number of young fledged per occupied territory was slightly lower than in 2017. In terms of the average number of young fledged per pair attempting to breed, productivity was also slightly lower than in 2017. Productivity expressed as the number of young fledged per successful pair was however, significantly lower (by a margin of 1.3) than in 2017.

Productivity (expressed by all three measures) in the SPA was significantly lower than that in the other two SPAs for which the chough is a (or the) feature of European importance and in National Park as a whole in 2018.

On Skomer Island, a total of five territories were occupied and all five pairs managed to get at least as far as having eggs in the nest. There have only been 3-4 years since 1993 (when the current annual surveillance of chough populations in the National Park commenced) in which as many as five pairs have attempted to breed on Skomer: three or four is more the "norm" for the island. Only one pair was known to have successfully fledged (two) young, however although a second pair may also have fledged at least one young.

On Skokholm Island, the 2018 breeding season was similar to that in 2017: two pairs attempted to breed although only one pair went on to successfully fledge young (*c.f.* two in 2017). Productivity was however, much lower than that in 2017 (when the two successful pairs managed to fledge four young each).

On the mainland coast between St Brides and St Ann's Head, a total of seven territories were occupied and in all seven, the pairs got at least as far as feeding young in the nest. Only three of the seven pairs however, managed to fledge a total of six young between them (three of which came from the Renny Slip, Deer Park site) in 2018, and in terms of the average number of young fledged per successful pair, productivity was similar to that in the SPA. The 2018 season was (by previous standards) also very disappointing on this section of the mainland coast.

3.2 Non-breeding choughs

Up to between 10 and 14 non-breeding choughs were regularly observed on Skomer Island between mid-March and late May. Up to eight non-breeding choughs were also seen from time-to-time on Skokholm Island during the same period. Similar numbers of non-breeding choughs were also observed on the Marloes-St Ann's coast during the spring. As in previous years, movements of birds between the islands and the mainland "opposite" were observed during the spring. It is likely that the flocks seen on the mainland and the mainland "opposite" were the same birds that commuted to and from (and between) the islands. Assuming that this was the case, the SPA together with the Marloes-St Ann's Head coast supported a flock of 10-14 non-breeding choughs in the spring 2018. This accounts for approximately 16-18% of the total number of non-breeding choughs observed in the National Park in the spring 2018.

The numbers of non-breeding birds seen on the islands and mainland "opposite" in the 2018 spring were significantly lower than in spring 2017 (during which the same section of coast together with the islands supported between 20 and 30 non-breeding choughs). Lower winter survival as a consequence of the cold February/March during which the "Beast from the East" brought snow and frost in late winter could account (at least in part) for the smaller numbers of non-breeding choughs that were observed in the SPA and in the National Park generally in the spring 2018. Food may have been scarce and foraging conditions difficult especially for young, inexperienced birds without territories, resulting in fewer birds surviving into the spring (those that did survive were likely to have emerged from the winter in relatively poor condition).

The late summer/early Autumn roost watches that had been carried out in 2014, 2015, 2016 and 2017 were repeated on Ramsey Island and on the mainland in Pembrokeshire in 2018 (there were no co-ordinated Wales-wide roost watches in 2018). A roost watch was carried out on the Deer Park on 29th August 2018 during which no choughs were observed on the Deer Park itself (other than the two resident pairs, both of which roosted at or close to their nest sites) or adjacent coast, and there were no movements of birds between the mainland and islands.

On 19th October 2018, a flock of 15 choughs roosted in the communal roost in the Horseshoe Cave (the two resident pairs roosted separately as usual). No movements between the islands and mainland were observed on that date. By 2nd November however, the flock had either fragmented and dispersed or moved on as a single flock to other parts of the coast (or islands) leaving the two resident pairs in their territories. In previous years, numbers of non-breeding birds roosting on the Deer Park have tended to build during late September and October and enter a decline from c. mid-November onwards.

4 Observations on the data for the breeding population in the SPA in 2018

The early and middle parts of the 2017/18 winter were relatively benign: generally mild with few “named” winter storms and little in the way of frost. By mid-late February 2018 however, a predominantly easterly airflow (the “Beast from the East”) became established across the UK resulting in plummeting temperatures, frost and lying snow (even on the coast and islands). It remained very cold for much of March, which was followed by a cold, wet April and early May. As already noted, the adverse weather conditions in late winter could have affected winter survival of choughs (especially inexperienced non-breeders without established territories). Non-breeding and breeding birds alike are likely to have emerged from the winter in relatively poor condition.

The cold late winter was followed by a cool, at times wet spring which in turn gave way to a very warm/hot and dry June and July, during which breeding pairs that may have entered the breeding season in poor condition were subject to further stress as food became scarce and difficult to find. Overall, the 2018 breeding season was late and it was marked by several nest-failures at critical stages when eggs and young were in the nest which were followed by a very protracted fledging period on much of the coast in the National Park.

The 2018 breeding season within the SPA was marked by a particularly disappointing season on Skomer Island. Although five territories were occupied, attempts to breed failed either at the stage when there were eggs in the nest or when there might have been small young in the nest. Only one pair was known to have definitely fledged young whilst a second pair may have got that far but this could not be confirmed. The 2018 season on Skokholm Island was perhaps slightly better (although not nearly as productive as the 2017 season), with one of the two pairs that attempted to breed managing to fledge young.

As noted in previous reports (e.g. Hodges, 2018), there are several factors that may have influenced the outcome of the 2018 breeding season within the SPA. These include the following:

- **The condition of the birds at the start of the breeding season.** As suggested above, individual birds may have emerged from the very cold late winter in poor breeding condition which in turn may have delayed the start of the breeding season;
- **Weather conditions during the breeding season.** The very dry conditions that prevailed during the latter half of June and July may have had significant impacts on the distribution and availability of food as a result of which, pairs may have struggled to find sufficient food for themselves and their young. On Skomer Island, pairs occupying the Payne’s Ledge and Lantern sites were confirmed as having young in the nest. A shortage of food may have resulted in relatively slow development of nestlings (hence later fledging dates than

might have been expected) and/or starvation of one or more young in the nest. Once fledged, the survival of juveniles into the late summer and autumn may have been adversely affected by food scarcity;

- **Relative experience of breeding pairs.** Pairs that failed to progress beyond the early stages of breeding (e.g. the pair occupying the new nest site in the Wick, which is not considered to be an alternative site within an existing territory) may have been inexperienced either as a breeding pair or of the territory that they had occupied. “New” pairs can take two or three seasons to become fully established in their territories before managing to breed successfully (older, more experienced birds may also take time to familiarise themselves with a new territory/nest site);
- **Extent of good quality, reliable foraging habitat.** Good quality habitat that is rich in soil invertebrates appears to be quite limited on both islands (although Skokholm Island appeared to be capable of supporting two very successful pairs in 2017). Changes in the structure of vegetation e.g. encroachment by bracken or tall herbs such as ragwort into areas that were previously dominated by short rabbit-grazed turf) have occurred on both islands. These changes may have influenced the distribution and quantity of soil invertebrates that are available to choughs. Other factors that potentially limit the extent and quality of foraging habitat on the two islands include the frequently thin acidic soils that are regularly disturbed e.g. by burrowing activity (of seabirds and rabbits) and that are subject to rapid wetting and drying -potentially hostile conditions for soil invertebrates. The drought conditions that developed during the late spring and early summer in 2018 will have limited still further the extent and reliability of foraging habitat that is capable of supporting breeding birds and their young on the two islands;
- **Localised intraspecific competition for limited resources.** Although instances of intraspecific competition were not observed, this could have been a factor affecting pairs nesting on Skomer Island in particular in 2018. Three of the five territories/nest sites that were occupied (South Castle Beach Cave, the new site at the Wick and The Basin) are very close to each-other. Observations suggest that these three sites failed at egg incubation stage. In “normal” years, this part of the island may be capable of supporting two or three pairs beyond the early stages of breeding. In 2018 however, as soils dried out and food became scarcer, there may have been competition between the neighbouring pairs for food which in turn will have increased stress on individual pairs to the detriment of their breeding performance;
- **The availability of safe, secure nest sites.** Good nest sites that are protected from rain and wind and are secure against potential predators may be limited on both islands. Nest sites may also deteriorate as the season progresses e.g. as a result of storm-damage or water-logging (although this is unlikely to have been a significant factor during the 2018 breeding season?);
- **Surveillance effort.** It is possible that (as may be the case on remote parts of the mainland coast) observations of chough activity may have been

insufficient to obtain an accurate picture of what happened at individual nest sites, some (e.g. The Basin and Payne's Ledge on Skomer Island) of which are very difficult to observe from the cliff tops. A considerable amount of effort (including repeat visits) and many hours of observations are often required in order to be certain about the locations of (occupied) nest sites and outcomes of breeding attempts.

As suggested in previous reports, the data obtained for breeding choughs in 2018 should be viewed in the context of the other primary and qualifying features of the SPA. Skomer and Skokholm are first and foremost seabird islands that support globally important numbers of burrow-nesting birds e.g. Manx shearwaters and it is difficult to envisage management interventions (other than perhaps management of bracken or other potentially invasive tall herb vegetation by manual means-other options e.g. introduction of livestock grazing are not feasible) that could be carried out to improve the extent and quality of foraging habitat for choughs without compromising other SPA features.

The health and viability of the breeding population within the SPA continues to be inextricably linked to that on the mainland and in particular the Deer Park-St Ann's coast. The islands' population will always be dependent to a greater or lesser extent on the "mainland opposite" for additional options for foraging, recruitment to the breeding population within the SPA and other aspects (including social interactions) of their annual lifecycle. This needs to be taken into account in the setting of and reporting on conservation objectives and performance indicators for the chough feature of the SPA.

Mention should also be made of the non-breeding population. Although the figures were significantly below those of 2017 (perhaps suggesting lower winter survival), the SPA, together with the mainland "opposite", continued to support an important part of the non-breeding population in the National Park in 2018.

5 Acknowledgements

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6 References

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Jane E. Hodges, Ecologist

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Annex

Skomer & Skokholm SPA: chough feature

Summary of breeding data-2018

1 Skomer Island

Site/territory	OS grid ref	Territory occupied	Breeding attempted	Eggs in nest	Young in nest	No. young known to have fledged
The Lantern	SM7430009160	Yes	Yes	Yes	Yes	2
Thorn Rock (The Neck)	SM7402008960	No	-	-	-	-
South Castle Beach Cave	SM736089	Yes	Yes	Yes	No	0
Amy's Reach	SM738090	No	-	-	-	-
Wick Cliff	SM725087	No	-	-	-	-
The Wick ²	SM726087	Yes	Yes	Yes	No	-
Wick Basin	SM721088	No	-	-	-	-
The Basin	SM719089	Yes	Yes	Yes	No	-
Tom's House ²	SM718089	No	-	-	-	-
Pigstone Bay/Bull Hole	SM7109	No	-	-	-	-
Payne's Ledge ³	SM722103	Yes	Yes	Yes	Yes	?
Double Cliff	SM7210	No	-	-	-	-

Notes

¹A new nest site (in a cave directly beneath the viewing point) confirmed in 2018, within the old Wick Cliff territory

² Tom's House is considered to be an alternative nest site to The Basin within the same territory

³ Adults were observed making feeding visits to the nest on 21/06/18 from a boat during a seabird count however, there were no **confirmed** sightings of any young that may have fledged from this site. Outcome of breeding attempts: unknown

2 Skokholm Island

Site/territory	OS grid ref	Territory occupied	Breeding attempted	Eggs in nest	Young in nest	No. young known to have fledged
Crab Bay	SM7304	No	-	-	-	-
Steep Bay/Twinlet	SM731005230	Yes	Yes	Yes	No	-
The Dip/Dip Gully	SM734045	No	-	-	-	-
The Quarry	SM728047	No	-	-	-	-
South Coast/Frank's Point	SM7304	Yes	Yes	Yes	Yes	2

General note: Historical nest sites and territories have been included in both tables for the sake of completeness and ease of cross-referencing of data for individual sites/territories between years