

## **Pembrokeshire Chough Study Group chough colour-ringing project: Preliminary observations and a plea for more re-sightings!**

This article attempts to summarise some of the findings emerging from a Pembrokeshire Ornithological Research Committee (PORC) Chough Study Group project, to examine post-fledging dispersal, survivorship and recruitment of choughs to the local breeding population. The study is based on ringing and re-sighting individually identifiable colour-ringed birds. Two hundred and twelve choughs (14 x 1<sup>st</sup> or 2<sup>nd</sup> year birds and 198 nestlings) have been colour-ringed in Pembrokeshire, up to 31<sup>st</sup> December 2001. So far, this has generated almost 1,000 confirmed re-sightings of many individuals.

Prior to this study, there had been a few records of four colour-ringed choughs in Pembrokeshire. (Sources: Pembrokeshire Bird Reports; photographs of a ringed chough at Ceibwr, taken by Annie Poole; and Graham Rees pers. com.). These were recorded in the 1980s, and the birds involved were ringed on Bardsey Island, off the Llyn peninsula, about 100 kilometres to the north, this being the nearest location to Pembrokeshire where choughs were regularly ringed at that time. These individuals have given us some tantalising information on some fairly long-distance chough movements, but little information on their overall survival or contribution to the breeding population as a whole.

### The Pembrokeshire chough colour-ringing project:

The current project commenced in winter 1992/93 following observations by Jack Donovan, of a flock comprising up to 30 choughs feeding on spilled grain in a failed barley crop on the Angle peninsula. These birds visited the area more or less continuously during late autumn 1992 and throughout winter 1992/93, and roosted nearby on the Old Red Sandstone coast. JWD arranged with the local farmer for permission for RJH, aided by members of the Pembrokeshire Ringing Group, to try and catch some of these birds for ringing purposes.

During January 1993 14 (mainly 1<sup>st</sup> winter plus a few probable 2<sup>nd</sup> winter) birds were successfully trapped and ringed. They were caught over a period of a few weeks, initially utilising a "Whoosh-net" baited with barley grain and later by a similarly baited "Canon-net". Each bird was marked with individual colour-ring combinations supplied by Eric Bignal (at that time the coordinator of the UK chough colour-ringing scheme). With the enlisted help of climbers, small numbers of pulli were successfully colour-ringed in summer 1993 and so commenced a project which continues to the present day. Since 1995, the Pembrokeshire study has become linked to the Welsh chough colour-ringing project coordinated by Tony Cross/Adrienne Stratford.

Currently, two study areas in Pembrokeshire (both designated under European legislation as Special Protection Areas for chough) are involved:

- The Castlemartin Coast (study commenced in 1993);
- Ramsey Island and St David's Coast (commenced in 1995).

Significant parts of the coast where choughs breed (especially at Castlemartin), have a major importance for sea-cliff climbing and other coastal recreation activities. Some sections of the coast are subject to seasonal climbing restrictions to protect chough and other cliff-nesting bird populations. It is therefore hoped that information gained from this project will positively aid appropriate management of recreation activities to benefit chough conservation.

### Preliminary Observations:

Bearing in mind the relatively small sample size (212 birds ringed over 9 years) only preliminary results can be presented here. Most reported re-sightings involved choughs ringed on the Castlemartin peninsula, in south Pembrokeshire, so the results presented here are biased to that part of the study area. It is hoped that data gathered from all re-sightings will be absorbed into a much larger "All Wales database" currently being analysed by Tony Cross/Adrienne Stratford with the help of the RSPB.

### Post-fledging dispersal of juvenile chough:

When juvenile choughs leave the nest, they often spend several days immediately after fledging, hidden in crevices close to or within a couple of hundred metres or so of the nest. The colour-ringing programme is showing that chough families generally remain close to the nest area for about a week after young have fledged. Most young have fledged by 3<sup>rd</sup> week in June and it is therefore not surprising that 99% of re-sightings of juveniles come from within 1 km of the nest site during this month (See Table 1). At this time, they remain in family groups. These families often interact with neighbouring choughs with dependent young, and the different family groups sometimes mingle and feed together.

In some years, an occasional late nest may still fledge young during the first week or so in July but this is exceptional and probably involves young inexperienced pairs, or possibly birds relaying after an early failure at egg laying stage. However, for most young choughs, July is the month when they are becoming independent and are beginning to wander further away from their natal area, but most are still sighted within a few km of their nest-site (average less than 2 km). See Table 1.

Re-sightings of young chough, during their first year of life (i.e. between June when they fledge and the following May), presently account for almost 60% of all reported colour-ringed birds. Of those surviving their first few weeks of life after fledging, most will join non-breeding flocks (which may include 1 and 2 year old birds) by their first autumn. There is some dispersal, or “wandering” along the coast from late summer onwards but most are re-sighted between 2 and 10 km from the natal area. There are still gaps in our knowledge of their distribution, especially during August (see later and Table 2).

Table 1. The number of chough re-sightings, by month and distance from natal area, during their first year of life after fledging.

	<b>0-1 km</b>	<b>2-5 km</b>	<b>6-10 km</b>	<b>11-15 km</b>	<b>16-25 km</b>	<b>26-50 km</b>	<b>Number re-sighted</b>	<b>Average distance from natal area</b>
June	116	1					117	<1 km
July	28	13	1				42	<2 km
August	2	3	2	2		4	13	15.8 km
September	14	7	34	3	2	2	62	7.0 km
October	3	3	19	1	1	6	33	11.8 km
November	2	6	8	1		3	20	9.7 km
December		1	18			3	22	10.9 km
January		11	8	3		5	27	12.5 km
February	1	13	11	2		6	33	11.5 km
March		8	6	1		1	16	8.1 km
April	2	13	1		4		20	7.3 km
May	1	5	1	4			11	7.7 km
<b>Totals</b>	<b>169</b>	<b>84</b>	<b>109</b>	<b>17</b>	<b>7</b>	<b>30</b>	<b>416</b>	

### Roosts:

By the middle of July young choughs are increasingly recorded in feeding flocks (for example, up to 21 have been recorded feeding together at Stackpole at this time). Such flocks may sometimes also include colour-ringed one- or two-year-old birds. These flocks utilise communal roosts which may be occupied by non-breeding, mostly immature, choughs all year round. Roost site locations may vary, probably in relation to the proximity of important food resources and perhaps also shelter on stormy days. Numbers of chough present at the roost will also vary, depending on dispersal and survival of individuals.

Feeding flock size and numbers using roosts increase during the autumn, and high numbers may last throughout winter. A few known regular feeding areas and roost sites, for example between Greenala and the Angle peninsula along the south Pembrokeshire coast, have held between 30 and 50 birds in recent years. The feeding flocks and their associated roosts are extremely

important to these birds – by feeding in flocks, choughs may optimise chances of locating and securing food resources. At the roosts and the feeding grounds social groups and pair bonds are formed, essential to their growth and development during the couple of years or so before they become physically and sexually mature enough to breed.

It is possible that juveniles are introduced to these roosts by their parents, as has been suggested on Islay in Scotland by Eric and Sue Bignal (pers. com.) though currently there are probably too few colour-ringing sightings and observations at roosts to confirm this in Pembrokeshire. However, there are observations of family groups feeding alongside one or two year old birds, in flocks in late summer, by which time such introductions may have already occurred.

Some ringed adults of breeding age have been observed with known juveniles and sub-adults, at late summer and autumn roosts. For example, two colour-ringed males (from territories at Lydstep and the Green Bridge of Wales, Castlemartin) were found roosting in a flock of about 30 birds near Greenala, on the south coast, in September 1995. These were quite young males; both had bred for the first time that year. Unfortunately, their offspring were not ringed and so could not be proven to be roosting with them. By early winter both of these adults were roosting with un-ringed partners, back within their breeding territories.

It is conceivable that these two males had joined the roosting flock to secure new mates. In 1995, one of the males (green/green) had formed part of a breeding “three-some” (comprising two ringed males and an un-ringed female) at the Green Bridge of Wales nest site. This was during a summer when it was evident that at least three breeding-age females on the Castlemartin coast had disappeared (all were assumed to have died) – at least two regular breeding sites were vacated when females disappeared in the spring.

#### Late summer juvenile dispersal:

There are surprisingly few observations of colour-ringed juveniles in August (13, about 3% of all re-sightings of juveniles recorded over the last nine years). This is quite low considering that there have been 62 re-sightings (about 15%) in September (Table 1).

Mortality accounts for a reduction in numbers re-sighted from late summer onwards (see later), but several of those birds not seen in August were actually seen again later in the year.

Interestingly, during August, juveniles are also re-sighted at an average distance of almost 16 km away from their natal area, whereas in September the average distance from the natal area drops to between 7 and 8 km, rising slightly to an average of between 10 and 12 km during the winter months. By the following spring the average distance from their natal area is similar to that recorded in September (Table 1).

Four re-sightings of individuals in August have been between 29 and 49 km of their natal area (Table 2). This provides further indication that a higher number of young chough may disperse or wander over a wider area at this time. They may, therefore, also feed and roost more frequently along areas of the Pembrokeshire coast where choughs are not regularly reported – perhaps utilising some unrecorded roosts?

A considerable number of re-sightings come from a c.15 km stretch of the limestone coast on the Castlemartin peninsula. So the high probability of recording bias must also be considered, especially as most reported sightings come from just a few core observers, and from a small number of popular coastal birding haunts. But the fact that the lowest number of reported sightings coincides with one of the busiest times of the year for holidaying visitors to the Pembrokeshire coast is non-the-less interesting. Is August perhaps, the month when the majority of us avoid walking the cliff-tops, or do we just leave our binoculars at home at this time?

Table 2. Long distance dispersal (beyond 15 km) of juvenile choughs colour-ringed in Pembrokeshire, during their first eight months of life.

Place ringed	Rings combination	Place reported	Month reported	Approx distance from natal area
Ramsey, Colomenod	Gre/Gre;Sky/BTO	Marloes Deer Park	October	16 km
Castlemartin St Govan's Head	Nig/Nig;-/BTO	St Anne's Head	September	20 km
Castlemartin St Govan's Head	Blu/Yel;-/BTO	St Anne's Head	September	20 km
Stackpole Mowingword	BTO/Blu	Skokholm	October & November	27 km
Castlemartin Devil's Barn	Bro/Gre; Nig/BTO	Skomer	August	29 km
Stackpole Mowingword	Yel/Yel;Nig/BTO	Skomer	August	30 km
Ramsey, Garlic	Ora/Red;Whi/BTO	Wind Bay	October	33 km
Ramsey, Colomenod	Yel/Red;Nig/BTO	Pen-y-Holt	September	34 km
Ramsey, Cantwr	Gre/Lim;Sky/BTO	Mewsford Point	November	37 km
Treginis, Porth Taflod	Yel/Nig;Nig/BTO	Ceibwr, Pen-y-Graig	August	45 km
Castlemartin Huntsman's Leap	Bro/Yel;Nig/BTO *	Strumble Head	August	49 km
Gower, Mewslade	Blu/Red;Nig/BTO	Bulliber Down	October	53 km

\* NB this bird (a female) was seen two summers in succession at Strumble Head but had returned south to the Angle peninsula by spring 2002 where, with a colour-ringed male partner from Castlemartin, she attempted to breed (unsuccessfully).

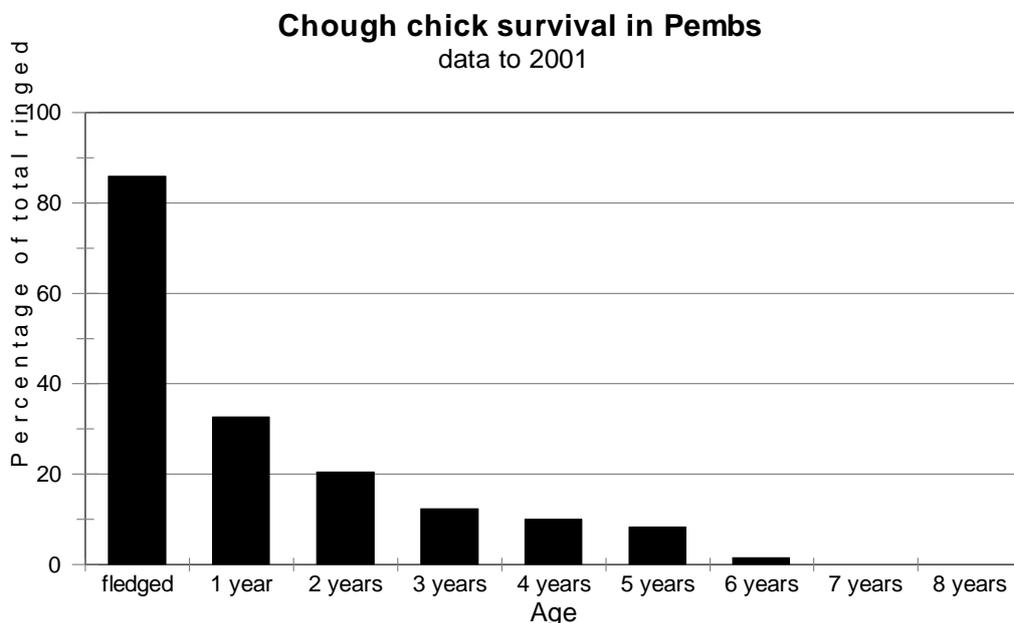
#### Survivorship of Pembrokeshire chough:

Survivorship of the full-grown birds ringed in winter on the Angle peninsula in 1992/93 has been good; some 36% were still live at the end of 2001 (nine years later). Re-sightings of colour-ringed pulli over eight years (Figure 1) indicate that:

- An average of 86% of nestlings survived to fledge successfully. This has varied between 67% (1993) to 95% (1995).
- Of those seen during their 2<sup>nd</sup> calendar year (one year old birds) the average survival rate is around 33%. This has varied between approximately 12% (birds born in 1994) and 57% (birds born in 1996).
- Of those seen in their 3<sup>rd</sup> calendar year (two year old birds) the average survival rate is about 20%. This has varied between zero (1994) and 50% (1996). Some of the birds in this age category may attempt to breed.
- Less than 20% of these (average 12%) have survived to their 4<sup>th</sup> calendar year (three year old birds) by which time they should be able to breed.
- ***For birds born in 1993 and 1994 1<sup>st</sup> and 2<sup>nd</sup> year survivorship was exceptionally poor! There are no re-sightings data to suggest that any of these birds survived to enter the breeding population!***

Despite a high fledging success in 1995, first and second year survival was rather poor. But birds born in 1996 have survived much better than average. That year alone has provided a considerable boost to the overall population. First and second year survival has been closer to the average in most years since then, at least up to 1999 inclusive. There are too few data to comment on later survival figures.

**Figure 1.** Chough surviving from each year



#### Periods of mortality

Of 212 choughs ringed up to the end of December 2001, approximately 162 of these have no confirmed recent re-sightings and are assumed to have died.

- 26 (16%) of these were never proven to have fledged successfully;
- 105 (65%) were only ever recorded during the first seven months after fledging of which
- 69 (66%) of these were only ever seen alive in June or July.

The period of highest mortality seems to be during the first four to six weeks after fledging. There are insufficient numbers of colour-ringed birds to confirm if there is a definite period of peak mortality for older birds. However, 17 of 31 birds aged between eight months and five years (about 55%) were last re-sighted during the period January to April, the period when they appear to be most vulnerable.

#### Longevity

The study covers an insufficient period of time to determine longevity. However, five of the original 14 birds colour-ringed in winter 1992/93 were still alive at the start of the 2002 breeding season. These birds were at least 8 months old when ringed and were still alive in their 10<sup>th</sup> year.

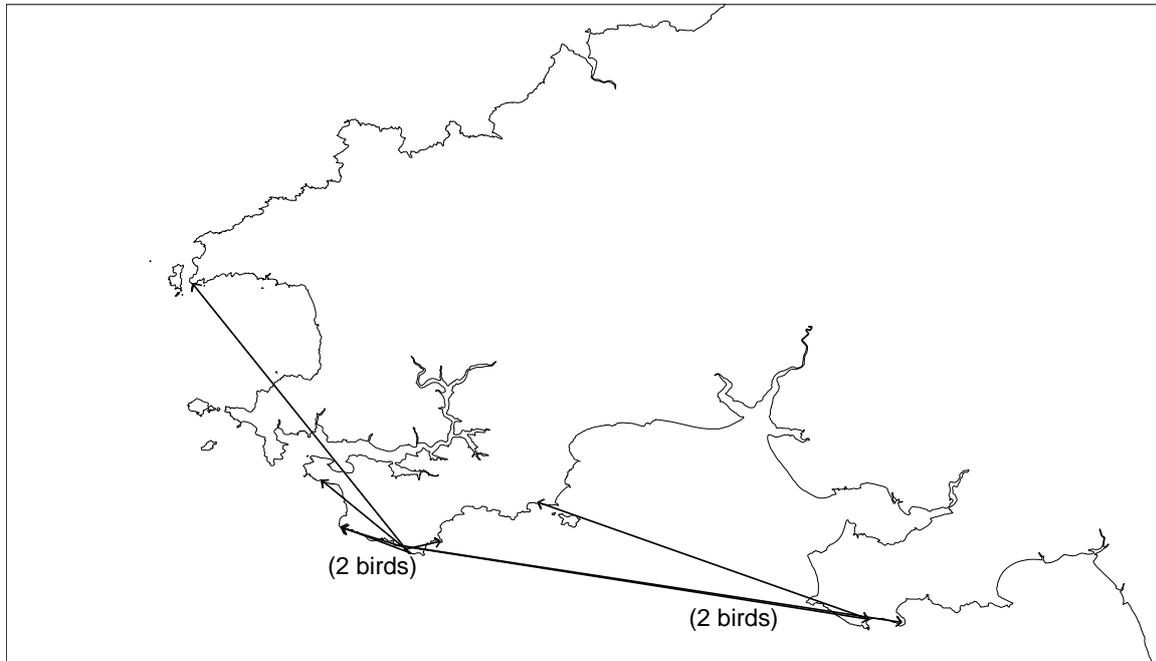
#### Male and female dispersal to breeding sites:

Seventeen choughs, colour-ringed as nestlings have so far entered the breeding population, since ringing started in 1993. Of these birds, 9 are males and 8 are females. A degree of caution has to be employed when examining a fairly small sample size, but so far the average distance moved by birds identified as males (based on size differences and behaviour) differs significantly from those identified as females.

The average dispersal distance by males from their natal area to nesting territories is 9 km (range 2 to 16 km); whereas females (Figure 2) have dispersed an average distance about three times greater than this from their natal area, at about 28 km (range 4 to 56 km).

**Figure 2.** Dispersal of eight colour-ringed female choughs from natal areas to breeding sites.

NB arrows are not indicative of actual routes taken, these are more complex. Multiple sightings of some individuals suggest that they followed the coast and offshore islands to reach their ultimate breeding territory destinations (See text below).



**Links between Castlemartin and Ramsey/St David's coast and the Gower:**

Three choughs, all females ringed at Castlemartin, have been involved in Spring dispersal to potential breeding territories (Figure 2). Two were ringed in 1995 from the same nest. Both spent their first two winters in south Pembrokeshire, sometimes together in the same flock of non-breeders. Having spent winter 1997/98 between Castlemartin Coast and nearby Angle coast to the west, with occasional sightings up to 13<sup>th</sup> March 1998, both then appeared a few weeks later on Gower coast.

- Black/Blue (right); pale Blue/BTO (left) was found on the south Gower coast, about 50 km east-south-east of her natal area. This was confirmed on 21<sup>st</sup> May 1998 (she was paired with an un-ringed male). She has been resident on south Gower ever since and bred successfully in 1999 & 2000.
- Sibling (Black/Lime right; pale Blue/BTO left) was seen on Gower in spring 1998 in another territory. Her identity was not fully confirmed until July 1998, when both colour-ringed females were seen feeding more or less side by side with their un-ringed partners. Black/Lime has not been reported since 1998.
- Green/Orange (right); Yellow/BTO (left) was also ringed in 1995. She spent her first two winters fairly close to her natal area. By 8<sup>th</sup> February 1998, she was reported c.21 km away at Dale Airfield. There were no more sightings until 17<sup>th</sup> April 1998 when she came off a nest on the St David's peninsula about 40 km north-west of the Castlemartin Coast. She reared 3 young at this traditional nest site (Taflod) and until spring 2002, (when she could not be re-found); she had successfully bred each year. Part of this territory also includes the southern end of Ramsey Island.

- A female Blue/Lime (right); Black/BTO (left) ringed as a nestling on Gower in 2000 had moved to south Pembrokeshire by Spring 2002 and was found mated with a young Castlemartin coast male, also ringed in 2000. They attempted, unsuccessfully, to breed on the limestone coast between Tenby and Lydstep Haven.

Two juveniles dispersed to the Castlemartin peninsula from Gower. One had arrived by autumn 2000 (See Table 2), and the other Blue/Green (right) Black/BTO (left) was first noticed in winter 2001/02. These were from a brood of 4 ringed in May 2000 on the south Gower coast. It remains to be seen if they will continue to survive and if so where they may breed.

A few young choughs have moved between the Castlemartin coast and Ramsey/St David's coast in the last few autumns/winters confirming interchange between these areas, some also having been seen for a time on Skomer Island or on the adjacent mainland.

#### A plea for more reported colour-ringed chough sightings:

There are still many gaps in our local knowledge. It is probable that there are still some unreported choughs, colour-ringed in Pembrokeshire, alive and well somewhere in Pembrokeshire, or perhaps on the coastlines of nearby or adjacent counties? For example:

- Where are the choughs apparently un-recorded in August?
- Are colour-ringed choughs breeding at remote nest sites away from the south coast that we do not know about?
- Are there stretches along the north coast with un-recorded colour-ringed birds from Ramsey?
- Do we still get occasional but unnoticed longer-distance movements into Pembrokeshire, of choughs ringed on Bardsey or elsewhere in north Wales?

If you see a chough with colour rings – please try and record the combinations of colours (look carefully at both legs), note the date and location, plus if possible, other supporting information such as if the bird was feeding alone, with a possible mate or in a flock. Please forward the details to Bob Haycock or to Graham Rees, County Bird Recorder. Your observations will add considerably to increase our knowledge of chough behaviour and survival, to aid their continued conservation.

#### Acknowledgements:

The success of this project relies on a number of enthusiasts. Members of the Pembrokeshire Chough Study Group were instrumental and inspirational in getting it started. Notably its chairman, Jack Donovan, who spotted the opportunity for commencing the project in winter on the Angle peninsula, prepared the ground by obtained permission from the farmer, helped “feed the birds” and aided the ringing of the first chough! Local climbers, Paul (Dee) Demengal and Pippa Skelton are dedicated enthusiasts and essential members of the “team” – without their help it would be impossible to reach the nests to ring the young! Tony Cross and Adrienne Stratford have contributed much useful help and advice and supplied all the colour rings over the last 8 years. Contributors of ring re-sighting information, has relied on several stalwart observers. Notably, Peter Hughes (Castlemartin Range); Jane Hodges (aided by other Pembrokeshire Coast National Park colleagues) (notably from Angle Marloes and Deer Park); Ian Bullock (and other Ramsey/RSPB colleagues) (mainly north Pembs); Skomer and Skokholm islands wardens; National Trust, Wildlife Trust, CCW colleagues, members of the Pembrokeshire Bird Group and members of the public (from various parts of Pembrokeshire and Gower). I would like to thank the MOD (Castlemartin Range) and the RSPB (Ramsey) for permission to ring and observe chough on their land, and finally Annie for comments on the text.

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References:

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